

Digitized by the Internet Archive
in 2023 with funding from
Kahle/Austin Foundation

WITHDRAWN
UTSA LIBRARIES

**SOVIET ECONOMIC DEVELOPMENT
AND AMERICAN BUSINESS**

SOVIET ECONOMIC DEVELOPMENT AND AMERICAN BUSINESS

RESULTS OF THE FIRST YEAR UNDER THE FIVE-
YEAR PLAN AND FURTHER PERSPECTIVES

BY

SAUL G. BRON

FORMER CHAIRMAN, BOARD OF DIRECTORS
AMTORG TRADING CORPORATION



1930

HORACE LIVERIGHT
NEW YORK

COPYRIGHT, 1930, BY HORACE LIVERIGHT, INC.
MANUFACTURED IN THE U. S. A.

CONTENTS

CHAPTER	PAGE
LIST OF TABLES IN THE TEXT	vii
LIST OF TABLES IN THE APPENDICES	xi
LIST OF DIAGRAMS	xiii
INTRODUCTION	xv
 I. THE ECONOMIC STATUS OF THE SOVIET UNION	
IN 1929	1
Comparison with Pre-War Production	2
U.S.S.R. Contrasted with United States	4
 II. THE FIVE-YEAR PLAN	7
Schedules of Five-Year Plan	9
Agricultural Program	13
Industrial Program	15
Transportation, Finance and Foreign Trade	18
 III. THE FIRST YEAR OF THE PLAN (1928-29)	21
Agricultural Production	21
Industrial Production	27
Electrical Development	32
Internal Trade	32
Transportation	34
Labor	35
Budget and Currency Circulation	35
Banking	38
New Construction	38
Foreign Trade	40
 IV. SOVIET-AMERICAN TRADE	44
Expansion of Soviet-American Trade	44
Soviet Purchases in United States	45
Industrial and Electrical Equipment	48
Agricultural Equipment	50
Soviet Exports to United States	52

Soviet Purchases by States	53
American Technical Assistance to Soviet Union	56
Question of Credits	57
Visits of Business Delegations	58
 V. THE SECOND YEAR AND THE FURTHER PERSPECTIVES	 59
Factors Making for High Rate of Expansion	61
Financial Program	69
Agricultural Machine-Building Industry	72
Automobile Industry	75
Oil Industry	76
Chemical Industry	77
Electrification	78
General Machine-Building	79
Metallurgical Industries	80
Building Materials Industries	81
Other Industries	82
Agriculture	85
Transportation	88
Federal Budget	89
Results of First Quarter of 1929-30	90
 VI. THE PROSPECTS OF SOVIET-AMERICAN TRADE	 92
 APPENDIX 1: INDICATORS OF NATIONAL ECONOMY	 101
APPENDIX 2: CULTURAL AND HEALTH DEVELOPMENTS	129
APPENDIX 3: SOVIET FOREIGN TRADE	130
APPENDIX 4: CONCESSIONS AND TECHNICAL ASSISTANCE	138
APPENDIX 5: EXPLANATORY NOTES	147

LIST OF TABLES IN THE TEXT

Table A.—Principal Indicators of National Economy, 1913, 1927-28 and 1928-29	3
Table B.—Basic Indicators of the Economic Develop- ment of the Soviet Union Under the Five-Year Plan	10
Table C.—Cultivated Area and Crop Yield, 1928 and 1929	23
Table D.—Production of State Large-Scale Industry, 1927-28 and 1928-29	29
Table E.—Gross Output of Industries Under Super- vision of the Supreme Economic Council, 1927-28 to 1929-30	83

U.S.S.R. IN EUROPE

Scale
100 0 100 200 300 km.



LARGEST INDUSTRIAL ENTERPRISES TO BE CONSTRUCTED UNDER FIVE-YEAR PLAN

CONVENTIONAL SIGNS

Regional Electric Generating Plants

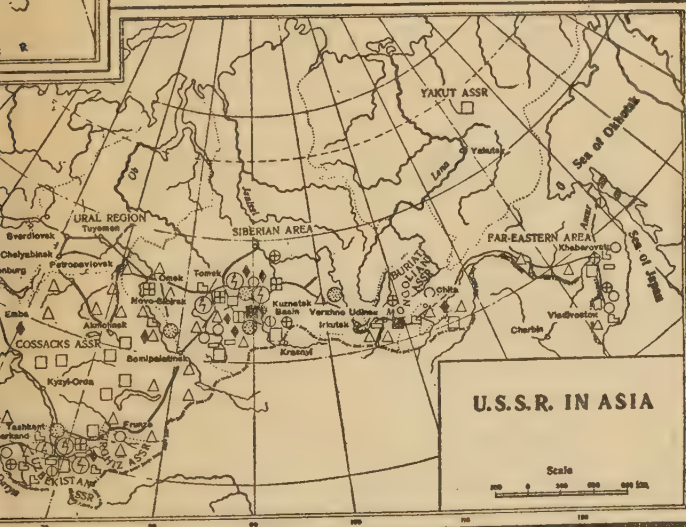
- (5) Already existing and being enlarged
- (4) Under Construction

Metal Industry

- Metallurgical works (iron and steel)
- Metallurgical works (non-ferrous metals)
- Machine Factories for Industrial Purposes
- Factories for Production of agricultural machinery
- Chemical plants and miscellaneous chemical works
- Miscellaneous factories and works

Forest

- Coal mines
- Oil Refineries
- Peat briquette plants
- Textile mills and factories
- Plants for production of building-materials
- Paper industry
- Saw mills and lumber preparation plants
- Location of „orchards“ (state farms)
- New railway lines
- Pine lines (oil)



Courtesy Albert A. Johnson

LIST OF TABLES IN THE APPENDICES

	PAGE
APPENDIX 1.—Indicators of National Economy . .	101
Table I.—Indicators of National Economy, 1913 and 1926 to 1930	101
Table II.—Indicators of National Economy, 1927-28 to 1929-30	104
Table III.—Cultivated Area and Output of Agricultural Products, 1927 to 1930	106
Table IV.—Output of Industrial Products, 1927-28 to 1929-30	108
Table V.—Production of General Machinery, 1927-28 to 1929-30	109
Table VI.—Production of Agricultural Machinery, 1927-28 to 1929-30	110
Table VII.—Financial Plan of Socialized (State and Coöperative) Economy, 1928-29 and 1929-30 .	111
Table VIII-A.—Summary of Federal Budget, 1928- 29 and 1929-30	112
Table VIII-B.—Federal Budget for 1929-30 . . .	113
Table IX.—Capital Investments in State Large-Scale Industry for 1929-30	116
Table X-A.—Large Industrial Plants Under Con- struction	118
Table X-B.—Power Plants to Be Under Construc- tion During Five-Year Period, Oct. 1, 1928- Sept. 30, 1933	124
Table XI.—Annual Developments Under Five-Year Plan, 1927-28 to 1932-33	127
APPENDIX 2.—Cultural Developments	129

	PAGE
Table XII.—Cultural and Health Developments, 1927-28 to 1929-30	129
APPENDIX 3.—Foreign Trade	130
Table XIII.—Soviet Foreign Trade, 1927-28 and 1928-29	130
Table XIV.—Soviet-American Trade Turnover, 1923- 24 to 1928-29	132
Table XV.—Soviet Sales in the United States, 1927- 28 and 1928-29	133
Table XVI.—Soviet Orders Placed in the U. S., by Products, 1927-28 and 1928-29	134
Table XVII.—Soviet Orders Placed in the U. S., by States, in 1928-29	137
APPENDIX 4.—Concessions and Technical Assistance .	138
A. Terms of Foreign Concessions	138
B. Concession Openings Available in the Soviet Union	139
C. Municipal Concession Openings	143
D. Technical Assistance Contracts Concluded by Soviet Organizations with American Firms and Engineers	144
APPENDIX 5.—Explanatory Notes	147

LIST OF DIAGRAMS

	PAGE
Largest Industrial Enterprises to Be Constructed	
Under the Five-Year Plan	<i>Frontispiece</i>
Regional Electric Power Stations to Be Built, Accord-	
ing to the Five-Year Plan	12
Coal Production in the Soviet Union	16
Mineral Resources of the U.S.S.R., European Part	62
Mineral Resources of the U.S.S.R., Asiatic Part .	63

INTRODUCTION

THE Five-Year Plan for the economic and social development of the Soviet Union provides a key to the prospects for the commercial and technical relations between the United States and the U.S.S.R. The growth of these relations is intimately tied up with the general development of the national economy of the Soviet Union. For this reason the progress made in the working out of the Five-Year Plan should be of interest to American business men, aside from its importance as an unparalleled example of economic planning on a large scale.

This is particularly true since in many respects the economic development of the Soviet Union will proceed along the general lines followed by the United States. In the first place, the Five-Year Plan involves the establishment of a power base consisting of a great network of central electrical stations and transmission lines reaching out to industrial towns and rural communities in all parts of the country. The basic industries of the country—coal, oil, steel, chemical, non-ferrous metals, machinery, etc.—will be built up on the basis of natural resources as diverse and as great as those which have supplied the foundation for the development of American industries, and to a great extent with similar types of equipment. The growth of large-scale farming by state and coöperative organizations will demand the type of powerful agricultural machinery and tractor developed in this country. The vast distances to be conquered will necessitate a great program of automotive development and road-building in which the United States may well play an important part. In fact, the developments planned in almost every branch of Soviet economy make the U.S.S.R. by far the greatest potential market for American industrial, agricultural and automo-

tive equipment, as it is already one of the most important existing markets. The actual achievements so far furnish a basis for expecting that the plans will be fulfilled, probably in an even shorter period of time than was originally expected.

The development of Soviet-American economic relations in the past was hampered by the great amount of misinformation spread among the American public, and particularly in business circles, by unfriendly and interested parties. It is gratifying to note that closer economic relations between the two countries during the last few years, and the visits of many leading American business and professional men to the Soviet Union, have gradually combined to dispel, to some extent at least, the accumulated mass of misconceptions regarding that country. The American business world is beginning to realize the unrivaled possibilities for American industry presented by the Soviet Union. The idea put forth a number of years ago that the U.S.S.R. as an importer of American products is a negligible factor is no longer entertained by any serious-minded business man. A number of outstanding American industrialists and bankers, who were pioneers in dealing with Soviet commercial institutions, have taken a leading part in applying realism and objectivity to the study of the growing Soviet market, and have exerted considerable influence in promoting closer economic relations between the two countries.

In spite of the handicaps under which American-Soviet trade is carried on, a substantial and rapidly growing business has developed. The trade turnover has increased from \$50,000,000 in the fiscal year 1923-24 to \$155,000,000 in the calendar year 1929, and in the latter year it was over three times the pre-war figure.

The accelerated economic expansion in the Soviet Union under the Five-Year Plan opens up the possibility of trade operations on an unprecedented scale. However, in this connection it must be stated that the real possibilities of Soviet-American trade cannot be attained under the present abnormal relations between the two countries. A solid

basis is requisite for the growing structure of trade. The legal and financial interrelations attendant on large-scale commercial intercourse are multiform and delicate, and they are increasingly handicapped in the present situation. There is much evidence to substantiate the belief that American manufacturers and financiers are beginning to realize that this situation does not correspond to the demands of the economic relations already established and particularly those which may be set up in the future. From my own experience I am convinced that the only solution of the problem lies in the establishment of normal relations between the two countries.

SOVIET ECONOMIC DEVELOPMENT
AND AMERICAN BUSINESS

CHAPTER I

THE ECONOMIC STATUS OF THE SOVIET UNION IN 1929

THE Soviet fiscal year 1928-29 * was essentially a transition year in that it marked the beginning of a period of industrialization at an intensified tempo and of transformation of the social and technical bases of agriculture—the beginning of the operation of the Five-Year Plan of economic construction. At the time of the promulgation of this program, which, in a few years, will convert the world's largest country from a primarily agricultural into a great industrial power, many doubts were expressed as to the possibility of bringing it to realization. For this reason it will be of interest to examine the results of the first year and to see how they measure up to the principal objectives of the program—the rapid development of basic industries and the socialization of agriculture. In order to supply a background for judging the results achieved under the plan and the future perspectives, the present chapter describes briefly the economic level of the country during the first year of the five-year period as compared with its pre-war position.

The year was characterized by continued growth in industry, transportation and, to a smaller extent, agriculture. The national economy of the Union of Soviet Socialist Republics in 1929 towered over that of all previous years, both prior to and after the Soviet revolution of 1917. At the same time, there were certain difficulties with regard to the supply of food products—a situation brought about by the somewhat unfavorable results of the crop of 1928—and the shortage of manufactured goods caused by the

* For explanation of terms used see Appendix 5, p. 147.

rapid increase in demand, particularly in rural communities.

The simplest expression of the economic development of the country is the growth in the national income. This was estimated by the State Planning Commission at 18 billion rubles in the fiscal year 1928-29 (ending September 30, 1929), figured in pre-war prices (in present-day prices the national income was estimated at 28½ billion rubles or close to 15 billion dollars)—12 per cent higher than that of 1927-28 and 28 per cent greater than in 1913.* In this connection it should be noted that estimates of national income in the Soviet Union are based on the production of the various branches of national economy and not on the income of individuals, as is the case in many other countries.

Comparison with Pre-War Production

If the national production of the country in 1929 is split up into its component branches and 1913 is used as a basis for comparison, it will be observed that the rate of growth of the various branches since the pre-war years shows many inequalities. The production of large-scale industry as a whole was estimated in 1929 at 60 per cent above the pre-war level, while the corresponding increase for agriculture was less than 13 per cent. Electric power production, on the other hand, was more than three times that of 1913. The railway system showed an advance in operations of about 50 per cent over the pre-war level. Foreign trade, due mainly to the cessation of grain exports, was 40 per cent below the pre-war figures.

The following table gives the basic indicators of the national economy of the country for the past two years and for 1913:

* The year 1913 represented the pre-war peak of economic growth for Russia. This was particularly true of agriculture, the grain production of 1913 exceeding by a large margin any ever before harvested in Russia. For this reason, in making a comparison with present-day agriculture in the table on p. 3 the figure for the average grain crop for the five pre-war years 1909-13 was used.

TABLE A.—PRINCIPAL INDICATORS OF NATIONAL ECONOMY,
1913, 1927-28 AND 1928-29

	Unit	1913	1927-28	1928-29	Per Cent Change 1928-29 from 1913
National income..	Thousand rubles, at pre-war prices	14,025,000	16,013,000	17,972,000	+ 28.1
Output of census industry‡ ..	Thousand rubles, at pre-war prices	6,390,000	8,430,000	10,240,000	+ 60.2
Total agricultural production ..	Thousand rubles, at pre-war prices	10,200,000	11,200,000	11,500,000	+ 12.7
Output of power, all stations..	Thousand kwh.	1,945,000	5,160,000	6,465,000	+232.4
Production—					
Coal	Thousand metric tons	28,900	35,400	40,600	+ 40.5
Oil	Thousand metric tons	9,300	11,800	13,700	+ 47.3
Pig iron.....	Thousand metric tons	4,210	3,300	4,018	— 4.5
Steel	Thousand metric tons	4,250	4,150	4,723	+ 10.6
Cotton cloth...	Thousand meters	1,625,000	2,704,000	2,952,000	+ 82.0
Agricultural machinery	In pre-war rubles	67,000,000	129,000,000	185,000,000	+175.8
Total area under cultivation ..	Thousand acres	282,074	285,779*	297,388*	+ 5.4
Agricultural production—					
Grain	Thousand metric tons	80,100	72,670*	76,250*	— 4.8
Cotton, unginned	Thousand metric tons	744	822*	976*	+ 31.2
Number of live stock	In thousand head of cattle units	84,900	90,200*	89,300*	+ 5.2
Railway freight operations ..	Million ton-km.	65,700	88,200	106,700	+ 62.3
Foreign trade ...	Thousand rubles, at prices of each year	2,894,169	1,722,554	1,727,000	— 40.4

(See Table I in Appendix I, p. 101, for further details of above items)

* For calendar years 1928 and 1929.

‡ See Appendix 5, page 147 for terms.

In regard to individual industries, the iron and steel industry, which suffered the greatest destruction during the civil war period, is one of the few still lagging somewhat behind 1913 in output (for pig iron). On the other hand, the production of coal and peat, oil, machinery and electrical apparatus, chemicals, textiles, shoes and paper is considerably higher than at any previous time.

Agriculture, as the above table shows, does not fare as well as industry in a comparison with the pre-war figures. Aside from grain, a number of important crops, including flax and sugar beets, have not yet attained the pre-war production level, in spite of the fact that the area under cultivation is greater (except for grain). On the other hand, production of cotton for 1929 was 31 per cent above that of 1913, and of oil seeds 40 per cent higher. The total area under cultivation in 1929 was $5\frac{1}{2}$ per cent above that of 1913. The yield per acre, however, was generally somewhat lower. A strong point of present-day agriculture is the large advance in animal products over the pre-war totals, which has offset to a great extent the comparative deficiency in the production of farm crops.

The above characterizes, in a general way, the condition of the national economy of the Soviet Union in 1929, which was relatively high as compared with the economic level of the country both in the best pre-war year and in more recent years. A radically different picture is presented, however, by a comparison of this level with that of the economically more advanced countries, and especially with that of the United States.

U.S.S.R. Contrasted with United States

In regard to steel, an industry in which Russia was ahead of the United States a century or so ago, Soviet production in 1929 was about 9 per cent that of the United States. The Russian oil industry, which was the world leader at the beginning of this century, produced one-tenth as much as the American petroleum industry in 1929.

The Soviet coal output and electric power production was

one-fifteenth as large as that of the United States. Railway operations in the Soviet Union, as measured by ton-miles of freight carried, were one-seventh those of the United States in 1929, and the railway mileage about one-fifth as great.

As to agriculture, it is interesting to note that while the area under cultivation in the U.S.S.R. last year was about four-fifths that of the United States, the number of tractors was only one twenty-fifth and the amount of mineral fertilizer used one-tenth. In particular, the production of superphosphates was one-nineteenth as great. The average yield per acre of wheat was only $10\frac{1}{4}$ bushels in the Soviet Union for the past two years as compared with $14\frac{1}{2}$ bushels in the United States.

Such a comparison of the economic levels of the two countries has, of course, the defect of omitting the important question of the rate of development and hence gives an incomplete and to a great extent misleading picture of the Soviet Union to-day. In analyzing the economic level of 1928-29, it is important to note that it marked the highest point in a process of upbuilding which began in 1921, when industrial production had dropped to only 15 per cent and the agricultural output to 50 per cent that of 1913, when a large part of the railway mileage was out of commission and famine and disease were decimating the war-exhausted population. This process carried the country within a few years to levels in most cases substantially higher than the best pre-war records. The output of large-scale state industry in 1928-29 was 23.4 per cent above that of 1927-28, which in turn was 22.5 per cent higher than 1926-27, while the increase recorded during the latter year was 18.2 per cent—a record-breaking tempo of growth. It may further be pointed out that the 12 per cent increase in the national income of the U.S.S.R. in 1929 compares with an annual pre-war increase for Russia of less than 3 per cent (which is only slightly under that recorded by other large countries).

The transitional character of the economic developments in 1929 is shown by the fact that, while new enterprises

started during the year accounted for only about 1 per cent of the total output, fully one-third of all the capital investments in industry went for the construction of new enterprises, the remainder going for expansion, reëquipment and capital repairs. This condition presages greater developments for the coming years, as the huge capital investments begin to yield returns commensurate with their extent.

CHAPTER II

THE FIVE-YEAR PLAN

OVER a year ago the Soviet government adopted a plan for the economic development of the country during the five-year period from October 1, 1928 to September 30, 1933. This program not only sets a goal for the economic and cultural progress of the country during the period, but also contains schedules for the growth of the various branches of national economy, which are worked out in great detail.

The present Five-Year Plan, which was adopted by the highest Soviet legislative body, the Congress of Soviets, in April, 1929, is the latest of a series of five-year programs prepared at different times by various Soviet economic bodies. The first economic plan of the Soviet government, the Program of Electrification, was prepared by a special committee called together by V. I. Lenin in 1920, under the chairmanship of G. Krzhizhanovsky, the present head of the Gosplan (State Planning Commission).

This plan, which meant a virtual electrical revolution, calling as it did for the construction of a great network of power plants with an aggregate capacity of $1\frac{3}{4}$ million kilowatts and transmission lines throughout the country, made its appearance in one of the darkest and most difficult years since the inauguration of the Soviet régime. It contrasted sharply with the disrupted condition of the national economy at the time and was received with great skepticism abroad. Even the few existing power plants in the country were either shut down or operating only part

time. Nevertheless, the plan has already been practically carried out in half the time originally set, which was fifteen years. The capacity of power plants in operation in the Soviet Union on October 1, 1929 was 2,155,500 kilowatts, or more than double the 1913 figure. What is still more significant, the Soviet Union had under construction in 1929 power plants with a total capacity of 1,500,000 kilowatts. By the middle of 1930 the capacity of plants under construction will approximate 3,000,000 kilowatts.

In 1925, toward the completion of the rehabilitation period, the "control figures," or the one-year programs prepared by the Gosplan, first made their appearance. Actual results of the past few years have corresponded with the control figures to a degree exceeding all expectations. This is especially true of large-scale industry, transportation and the other branches of national economy which are under the control of the state. The programs of the Gosplan for agriculture, with its twenty-five million individual producers, were less successful. The rapid establishment of large state and collective farms will undoubtedly serve to strengthen the work of planning agricultural production.

A five-year plan was drawn up in 1927. Its inadequacy, as well as that of a number of later revisions, was caused by an underestimation of the productive possibilities of Soviet national economy. The above-mentioned (1927) five-year plan, for instance, called for an increase of 10.5 per cent in the output of state large-scale industry in 1928-29 over that of the preceding year, while the actual gain was 23.4 per cent. The federal budget for the fiscal year 1928-29 was forecast at 5,884,000,000 rubles whereas the actual budget was over 8,000,000,000 rubles.*

The present Five-Year Plan was revised to provide for an annual tempo of growth of more than 20 per cent, after several more cautious proposals had been rejected. It was originally prepared with two variants, a minimum and a maximum. The minimum variant was at first accepted as

* In the Soviet Union, where the processes of production are highly socialized, the federal budget is an index of economic progress.

the basic one but was definitely eliminated at the Congress of Soviets in 1929. The results of the first year of the Five-Year Plan and the revised, more detailed, schedules for the second year are in advance of even the maximum variants. Consequently, it is considered possible that the Five-Year Plan, at least in its major aspects, may be carried out in about four years.

Schedules of Five-Year Plan

The Five-Year Plan is based on a careful estimate of the present economic level of the country, its natural resources, labor power and the possibilities of capital investments. With regard to natural resources, the plan calls for a substantial increase in exploration activity. The expenditures for exploration and scientific research were nearly trebled in 1929, as compared with the preceding year, and will be increased correspondingly in 1930.

The population of the Soviet Union, according to the estimates of the plan, will increase about 12 per cent between 1928 and 1933 and will reach a total of over 169,000,000 in the latter year. This will be 21 per cent more than that of Russia in the same territory in 1913. The population of working age, that is from 16 to 59 years, it is estimated, will increase 11 per cent and amount to 91,500,000. A much greater gain will be shown, however, in the number of persons working for hire, which will be nearly 39 per cent for the five years for industry, transportation, agriculture, etc. Both in cities and rural communities millions of persons before either partly or wholly unemployed will be drawn into industry or agriculture. The total number of persons working for hire is expected to reach 15,764,000 * by 1933 as against 11,350,000 in 1927-28, a gain of over four million.

The table on the next page gives the principal schedules of the Five-Year Plan for 1932-33, the last year of the period, as compared with 1927-28, the year preceding the inauguration of the plan :

* Peasants working on their own farms or in collectives are not included in this figure.

**TABLE B.—BASIC INDICATORS OF THE ECONOMIC DEVELOPMENT OF
THE SOVIET UNION UNDER THE FIVE-YEAR PLAN**

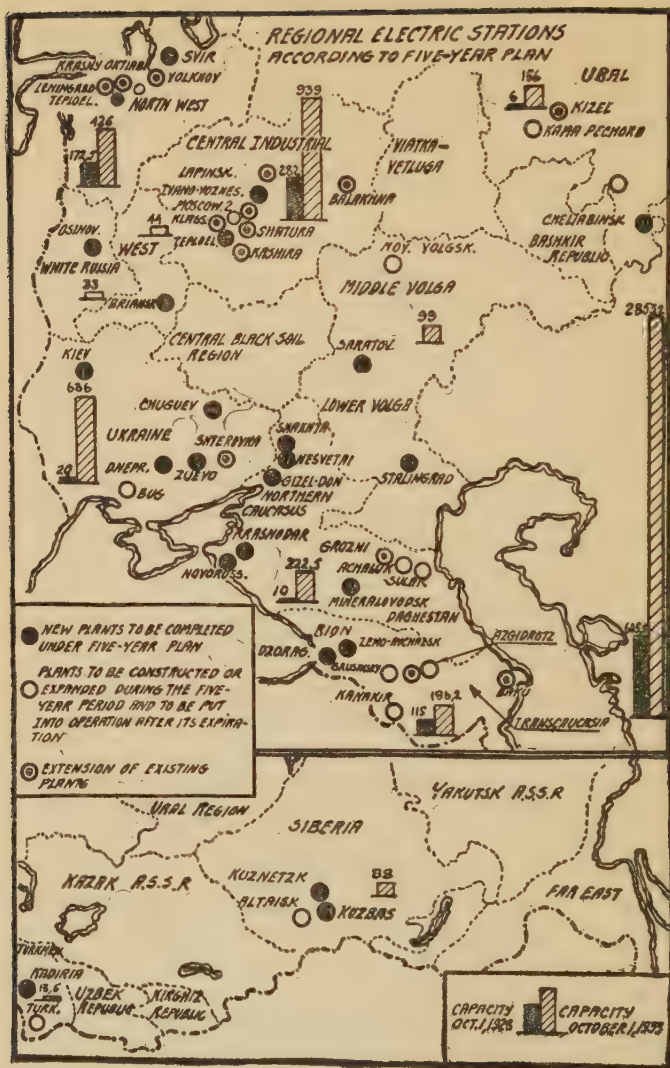
	1927-28	1932-33	Per Cent Increase
Total population, as of April 1, in millions	151.3	169.2	12
Capitalization at end of year, at 1926-27 prices, in billions of rubles	69.8	126.9	82
Operating capital, at 1926-27 prices, in billions of rubles.....	15.0	34.5	130
Capital investments in entire national economy, at 1926-27 prices, in billions of rubles.....	8.2	27.7	238
National income (net production), in billion rubles:			
At 1926-27 prices.....	24.4	49.7	103
At prices of respective years..	24.7	43.3	75
Total aggregate power capacity, in thousand kw.	1,700	5,500	224
Output of electric power, in billion kwh.	5.1	22.0	331
Basic capital of industry (excluding industrial housing) at end of year, at 1926-27 prices, in billions of rubles.....	9.6	30.7	220
Capital investments in industry (excluding industrial housing), at 1926-27 prices, in billions of rubles	1.9	7.4	290
Number of workers in census industry (excluding salaried employees) in thousands.....	2,750.0	3,631.0	32
Gross production of all industry, in billion rubles:			
At 1926-27 prices.....	18.3	43.2	136
At prices of respective years..	18.0	32.7	82
Industry covered by plan of Supreme Economic Council, in billion rubles, at 1926-27 prices....	10.9	30.4	179
Capital investments in agriculture proper, at 1926-27 prices, billion rubles	3.1	4.9	58
Gross agricultural production, for agricultural years, billion rubles:			
At 1926-27 prices.....	16.7	25.8	55

TABLE B.—BASIC INDICATORS OF THE ECONOMIC DEVELOPMENT OF THE SOVIET UNION UNDER THE FIVE-YEAR PLAN—(Continued)

	1927-28	1932-33	Per Cent Increase
At prices of respective years..	17.4	26.1	50
Farm crops, total, at 1926-27 prices, billion rubles	9.2	14.5	58
Animal products, total, billion rubles, at 1926-27 prices.....	5.3	8.1	53
Capital investments in transportation, at 1926-27 prices, in billion rubles	0.95	4.65	389
Railway freight traffic, in billion ton-kilometers	88.1	162.7	85
Construction of buildings and structures, excluding farm construction, at 1926-27 prices, in billion rubles	2.6	12.5	381
Producers' prices (1926-27 = 1,000):			
General index of industrial prices (selling prices of state industries)	961	731	—23.9*
General index of agricultural prices (purchasing prices of state procuring agencies)	1,047	991	— 5.4*
All articles—Index of cost of living of the Central Statistical Administration (1913 = 1,000)	2,050	1,760	—14.1*
Index of construction costs, with allowance for rationalization (1926-27 = 1,000)	961	564	—41.3*

* Decrease.

As regards the power basis of the industrial and agricultural program, the Five-Year Plan provides for a 224 per cent increase in the installed capacity of all electric power stations, which will reach a total of 5.5 million kilowatts. The increase for central regional stations, the development of which was particularly low before the war, will be almost fivefold. The total output of electric power is scheduled to reach 22 billion kilowatt-hours in 1932-33—331 per cent more than in 1927-28 and over eleven times the production of 1913. This huge program will necessitate capital investments in public utility power plants (not counting those connected with industrial establishments) of 4,470,000,000 rubles (\$2,302,000,000).



Agricultural Program

The production of all farm crops is scheduled to increase 58 per cent, figured in physical volume. In particular, it is planned to expand the production of grain crops over 50 per cent, while that of industrial crops, which will supply raw materials for the rapidly growing industries, will be doubled.

The Soviet Union, with perhaps the largest area of fertile land of any country and an agricultural population of over six-score million, is still faced with the necessity of increasing agricultural production to a level where it will fully satisfy domestic needs, and also provide a reasonable surplus for export. During the past few years production has been barely adequate, owing to the greatly increased consumption of many farm products by the peasants and the small size of individual farms (the great estates which supplied a considerable part of the grain exports before the war were largely broken up). In 1913 grain products (including seeds, oilcake, etc.) made up 44 per cent of the total value of Russian exports while in 1928-29 the corresponding proportion was less than 5 per cent, no wheat or rye being exported.

In planning the production of agriculture over an area of 300,000,000 acres, worked until this year by about 25,000,000 individual peasants and many state and collective farms, the Soviet authorities have undertaken a gigantic task. The Gosplan bases its expectations of fulfilling its program upon two principal factors: the increased participation in agriculture of state and coöperative enterprises, and the introduction of modern methods, which will reduce to some extent the hazards of weather conditions, plant pests, etc., that have plagued Russian agriculture from time immemorial.

Many American agricultural economists have put forth the idea of large-scale corporation farming as the best means of reducing production costs and of making agriculture pay. Essentially the same principle is being put into operation in the Soviet Union, the place of private cor-

porations, however, being taken by state-owned and collective (coöperatively operated) farms.

The second phase of the agricultural program will consist largely in supplying agriculture with great quantities of machinery and fertilizer and improving farming methods. This part of the plan is closely tied up with the progress of collectivization and the organization of large state farms. The reasons for this are not far to seek. The millions of small individual producers can neither buy nor economically maintain large quantities of tractors or other modern agricultural machinery. A radical improvement in crop yields and in costs in the Soviet Union can be effected only through the introduction of large-scale farming.

In studying the figures of the Five-Year Plan for agriculture, it should be noted that later developments have resulted in a sharp upward revision of the program, particularly with regard to the socialization of farming. According to the original plan, by the end of the five-year period collective farms were to have a total area of about 21,000,000 hectares (52,870,000 acres) as compared with an area of 1,390,000 hectares (3,433,000 acres) in 1928. In addition, the state farms were to make up a total area of 5,000,000 hectares (12,350,000 acres) as against 1,425,300 hectares (3,520,000 acres) in 1928. The socialized sector, according to the original program, was to account for somewhat more than one-fifth of the total sown area in 1932-33. The plan has now been revised so that by 1933 practically all the area under cultivation will be worked by collectives or state farms. A particularly large growth is scheduled for the huge, fully mechanized state grain farms, the first of which were organized late in 1928.

The modernization of agriculture is expected to result in a 35 per cent increase in the yield per acre by 1933. This will be brought about by an extended use of modern agricultural machinery, better methods of farming (such as a wider introduction of crop rotation, autumn plowing, etc.), a great increase in the use of fertilizers and of improved seeds. To attain this goal the output of tractors, combines and other agricultural machinery, auto trucks

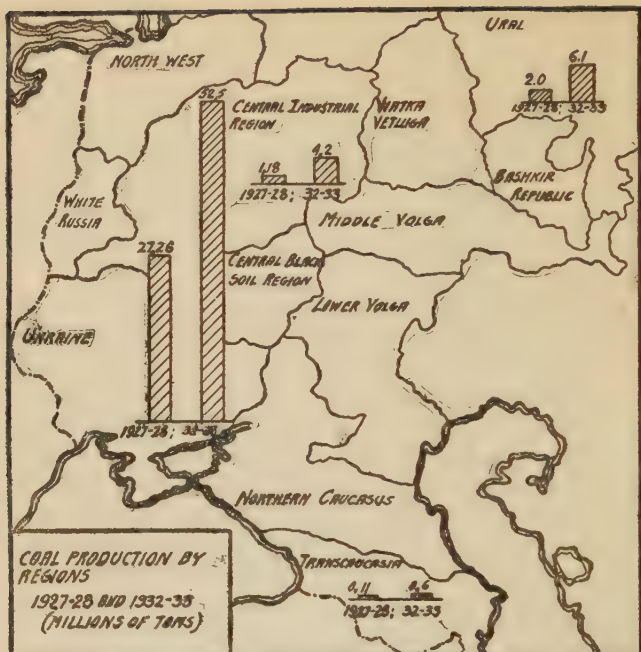
and fertilizers (as well as electric power to make possible cheap fertilizer production, etc.) must be expanded far beyond the present figures. At the same time the imports of many of these products will have to be continued and even increased. In this connection, it may be noted that in the fiscal year 1928-29, in spite of a 43-per cent gain in domestic production, imports of agricultural machinery into the U.S.S.R. were double those of the preceding year, as were also the purchases in the United States of this group.

Industrial Program

With regard to tractors, the original program called for an output of 55,000 in 1933. For automobile production the program for 1932-33 was 130,000 cars. These totals are many times greater than the small production recorded in 1927-28. The value of the agricultural machinery output was to increase fourfold during the period. The agricultural developments of 1929 have made it necessary to increase the program for tractor and other farm machinery construction very considerably. The automobile program has also been revised upward. With regard to mineral fertilizers, the program calls for a total output of eight million metric tons in 1932-33, forty times the production of 1927-28.

The rapid development planned for the automotive and machine-building industries and the general program of industrial and power plant construction will, of course, necessitate a corresponding growth of the heavy industries on which they depend. Thus, it is planned to treble the output of pig iron, to more than double the production of coal and petroleum, and to quadruple the output of cement and bricks.

The upbuilding of agriculture is also tied up with an adequate supply of manufactured goods of general consumption in order to provide an additional incentive to the peasants to produce a surplus of grain. These items include textiles, leather and rubber shoes, hardware products, tobacco, matches and many other consumers' products, the output of which it is planned to double. Nevertheless,



COAL PRODUCTION IN THE SOVIET UNION

the producers' goods industries are expected to show a considerably greater gain than those producing goods for the direct consumption of the population. For all industries, the aggregate increase in production by the end of the five-year period is scheduled (in stable prices of 1926-27) at 136 per cent and for large-scale state industry 179 per cent. Small-scale industry, though showing considerable expansion, will not keep pace with the development of large industries, which will receive the greater share of new capital.

It is planned to increase the gross value of the industrial output from 18,300,000,000 rubles in 1927-28, the year before the plan, to 43,200,000,000 in 1932-33, figured in prices of 1926-27. The gross output of agriculture for the latter year is expected to amount to 25,800,000,000 rubles. Therefore, by the end of the period the Soviet Union will have definitely become a predominantly industrial country. As the capital investments in industry are to increase each year at a sufficient tempo to make it possible to maintain a high rate of expansion even after the expiration of the present five-year period, the total basic capital of industry is scheduled to show an even greater increase than production. Estimated in 1926-27 prices, this capital, not including industrial housing, will have attained a total of 30,700,000,000 rubles by September 30, 1933 as against 9,600,000,000 rubles in October 1928—a gain of 220 per cent. It is planned to increase capital investments in industry 290 per cent by 1932-33.

Along with the increase in production will go a steady gain in the number of workers employed, which, by the end of the period, will be about one-third greater than in 1927-28. The output per worker is expected to show a gain of 110 per cent, as a result of improved equipment, more efficient organization of work, etc. At the same time, however, the length of the working day will be reduced to seven hours in all enterprises. At the present time over half a million workers employed in state large-scale industry are already on the seven-hour work-day.

It is expected that there will be a steady improvement

in the living conditions of the workers. Wages of industrial workers are scheduled to advance 47 per cent but the great increase in the productivity of labor will make it possible at the same time to reduce costs by an average of 35 per cent. Part of this reduction in costs will be passed on to the consumer in the form of lower prices, since the industrial wholesale price index is to be reduced by 24 per cent. This, in turn, will further increase real wages, which are expected to show a gain of 70 per cent over 1927-28 and 109 per cent over 1913.

The policy with regard to the reduction of costs and prices forms one of the principal elements of the Five-Year Plan. It is expected that state industry will be in a position to attain larger profits by increasing the divergence between costs and prices. These greater profits will form one of the principal sources for financing industrial expansion.

Transportation, Finance and Foreign Trade

With regard to transportation the Five-Year Plan provides for an 85 per cent increase in railway freight traffic. Capital investments in railway construction and improvements during the period (in prices of 1926-27) are put at 9,520,000,000 rubles (\$4,898,000,000). Here again, the progress of new construction will exceed the rate of increase in operations, making possible an even higher level of transportation development in the succeeding period.

The Five-Year Plan contains a thorough analysis of the sources of financing for this huge construction program. The federal budget, in particular, is expected to more than double during the period. The total capital required for financing the economic and cultural program of the country for the five years is estimated at over 86 billion rubles, including investments in new construction and improvements of nearly 65 billion rubles. Of the total, 55 billion rubles (28 billion dollars) will go for the needs of the national economy, 21 billions for the financing of social welfare and cultural work, and about 10 billions for general administrative and national defense purposes.

The plan calls for an average annual gain in the production of state large-scale industries of about 23 per cent during the period, while the gross output of agriculture is scheduled to show an average increase for each of the five years of 9 per cent. The national income, it is expected, will show an average yearly increase of over 15 per cent, not taking into account the planned reduction in prices.

At almost every point the carrying out of the Five-Year Plan is closely connected with the foreign trade program. To meet the schedules set in the Plan there will be required ever-increasing quantities of imported equipment and, to some extent, also raw materials for industry. On the other hand, this will necessitate a steady development of exports to pay for imports and to create a surplus. Thus, the plan contemplates an increase of 165 per cent in exports by 1932-33 (over the 1927-28 figures) and 80 per cent in imports. Total exports during the period are set at 7 billion rubles and imports of 6.2 billions, which would thus net a favorable balance for the period of 800 million rubles.

Imports of equipment for industry and transportation and of industrial raw materials will make up about three-fifths of the total during the period. The imports, of course, can be substantially increased under favorable financing conditions.

The Five-Year Plan involves a large growth in exports of farm crops, and grain is expected to appear on the export list. In addition, exports of forestry and mining products (lumber, oil, manganese, platinum, etc.) and animal products (butter, eggs, bacon, casings, bristles, etc.) are expected to gain substantially.

These are, in brief outline, the principal developments planned for the five-year period, the second year of which is already well under way. The significance of these developments for American industry and finance should be considerable, involving, as they do, the upbuilding on a great scale of heavy industries and large-scale farming. The concrete relation of the developments in Soviet

industry to Soviet-American economic relations will be made apparent in the following chapters describing the results of the first and the program for the second year of the Five-Year Plan.

CHAPTER III

THE FIRST YEAR OF THE PLAN (1928-29)

How has the Five-Year Plan worked out in its first year of operation? A study of the results of the year as measured against the schedules of the plan should furnish an indication of the future prospects as well as of the efficacy of the plan as a whole.

The year was characterized by a continued disproportion in the degree of development of industry and agriculture. The agricultural program for the year, which strove to reduce this divergence to a certain extent, fell short of fulfillment. However, while the quantitative results of agriculture in 1929 were not quite satisfactory, the progress in regard to its social and technical reorganization—the organization of state and collective farms, the introduction of machinery and fertilizers—greatly exceeded the expectations of the State Planning Commission. With respect to industry, while the total production exceeded the schedules, the situation with regard to reduction of costs, increase in the productivity of labor and improvement in the quality of production was not quite up to the program.

Agricultural Production

Agricultural production as a whole for 1929 gained somewhat over the preceding year. Nevertheless, it fell considerably short of the program. Meteorological conditions affecting the crop, which was of average size, were not entirely favorable. This was true of both the winter of 1928-29 and the late summer of 1929. Just as in the preceding year, a considerable part of the winter sowings of 1928 was destroyed by frost, although the damage

was smaller. The snow cover, particularly in the Ukraine and the Northern Caucasus, proved to be not entirely sufficient. The late spring of 1929 affected adversely the beginning of the spring sowing. The dry weather of July and August, particularly in the eastern sections of the country, also had a detrimental effect on the yield per arce. Another negative factor was the discouragement of the peasants over the unsatisfactory results of the previous agricultural year, when winter sowings were destroyed over a wide area.

Of the total area sown to grain crops in the U.S.S.R. in the fall of 1928 and the spring of 1929, estimated at 98,199,000 hectares (244,530,000 acres), crops were gathered from only 95,787,000 hectares. Nevertheless, the harvested area under grain crops in 1929, according to preliminary estimates, was 4 per cent greater than in 1928 and the total crop (76,250,000 metric tons) 4.9 per cent greater.

The total acreage sown in the fall of 1928 and the spring of 1929 was estimated at 120,376,000 hectares (297,141,000 acres) or 2.5 per cent below the program for the year. The area from which crops were actually gathered, excluding areas on which they were destroyed and not resown, amounted to 117,964,000 hectares (291,213,000 acres), as compared with a productive area of 112,976,000 hectares in 1928, a gain of 4.4 per cent.

An unsatisfactory element in the agricultural situation was the fact that the area under grain crops fell 3.2 per cent below the program. The area sown to industrial crops was also smaller than planned, although substantially above the area sown in 1928. The cotton acreage of 1,036,000 hectares (2,559,000 acres), although of record proportions and 13.2 per cent above that of 1928, was 6 per cent below the schedule, due to insufficient water supply.

While the area sown to sugar beets was 1.8 per cent greater than that of 1928, the lower yield per acre and the reduced sugar content resulted in a smaller sugar production. Of the principal crops only flax showed a sown area

and production greater than the program, the acreage being 14.3 per cent above the 1928 figure.

The following table gives the cultivated area and total yield of the principal crops in 1929, as compared with the previous year:

TABLE C.—CULTIVATED AREA AND CROP YIELD 1928 AND 1929

	AREA SOWN		PRODUCTION	
	(in hectares, including damaged acreage)		(in metric tons)	
	1928	1929	1928	1929
Winter crops—				
Rye	25,558,000	25,554,000		
Wheat	7,577,000	6,966,000	*	*
Barley	432,000	402,000		
Spring crops—				
Rye	509,000	505,000	19,120,000	20,220,000
Wheat	21,512,000	23,678,000	21,590,000	20,110,000
Barley	6,712,000	7,675,000	5,490,000	7,350,000
Oats	17,250,000	18,799,000	16,480,000	16,610,000
Miscellaneous	15,324,000	14,620,000	9,990,000	11,960,000
Total grain	94,874,000	98,199,000	72,670,000	76,250,000
Other crops—				
Cotton, unginned.	915,000	1,036,000	822,000	976,000
Sugar beets.....	770,000	784,000	10,140,000	8,400,000
Flax	1,730,000	1,977,000	352,400	427,750
Hemp fiber	966,000	969,000	528,200	520,300
Sun-flower seed..	3,734,000	3,526,000	2,137,000	2,111,700
Potato	5,728,000	5,944,000	45,580,000	47,850,000

* Shown together with spring crops.

The number of live stock on farms failed to advance for the first time in recent years. The particularly severe winter of 1928-29 resulted in an insufficient supply of feed in certain sections of the country which necessitated an unusually great slaughter of animals for meat. The total number of cattle in the spring of 1929 was estimated at 68,069,000—2.4 per cent less than in 1928, although the number of cows did not decline. The number of horses was 33,969,000—an increase of 2.3 per cent, but that of working horses gained only 1.4 per cent. The adverse weather conditions affected particularly hog raising, the

number of hogs declining to 20,890,000 head, some 19 per cent below the schedule.

The progress made in the reorganization of agriculture on a more modern technical basis through the establishment of large-scale mechanized state and collective farms was more rapid last year than had been forecast by the most optimistic plans. The most outstanding examples of these farms are those of the State Grain Trust (Zernotrest). In the fall of 1929 the Zernotrest sowed 159,000 hectares (393,000 acres) and made preparations for sowing over 800,000 hectares (1,976,000 acres) in the spring of 1930. The total sown area of all state farms (of the Zernotrest, the State Farm Center, the Sugar Trust, etc.) increased from 1,425,300 hectares to 1,815,900 hectares (4,485,000 acres) in 1929, grain making up 1,152,800 hectares. The newly organized state farming enterprises differ from the older state farms in a number of respects. In the first place they are organized for a single purpose only (grain growing, cattle raising, sheep breeding, etc.). Secondly, they are of unusually large size. One of them, the "Giant" farm in the Northern Caucasus, cultivated a total of 130,000 acres last year, and of the fifty-five state farms organized in 1929, most have an area of more than 20,000 acres each. Thirdly, they are completely mechanized and use the most modern methods of cultivation.

A significant feature of the development of state farms in 1929 was the large increase in the number of tractors. About 60 per cent of their total acreage was cultivated with the use of tractors, which had an aggregate capacity of 76,000 horse-power, or nearly three times the total of 1928. That these farms have already become an important factor in the agriculture of the Soviet Union is shown by the fact that their production of grain in 1929 amounted to 1,275,000 metric tons. Still more significant is the fact that about two-thirds of the grain produced by state farms was turned over to official marketing agencies and constituted 5 or 6 per cent of the total grain purchased since July 1, 1929, as compared with the 1.2 per cent of the total grain acreage which state farms made up in 1929.

The progress of collective farms was even more rapid, their sown area reaching a total of 4,262,800 hectares (10,530,000 acres) as compared with the 1928 area of 1,390,000 hectares, the bulk of the acreage being sown to grain. The number of peasant households in the collectives was over 1,000,000 in the spring of 1929, as against 445,000 in 1928. The farms produced nearly 3,000,000 tons of grain, of which somewhat less than half was sold to state and coöperative agencies. The number of tractors increased substantially, totaling 1,427,000 horse-power in 1929, while the number of cattle was 370,300—2½ times the figure of the preceding year.

The state and collective farms together supplied about one-eighth of the total grain procurements for the agricultural year 1929-30. In the previous year, their rôle had been considerably less.

While the newly organized state farms usually cultivate either virgin or abandoned land, the collective farms are formed by the consolidation of small holdings of individual peasants for the purpose of joint cultivation of the land with a more extensive utilization of tractors and other machinery. An important link in the system of socialized agriculture is the recently organized tractor service stations which rent tractors to the collectives, in return for a part of their crop. A total of over 150 such stations is being organized for work this year.

The collective farms, by pooling their labor power and equipment, eliminating border strips and using machinery and fertilizers, are able to cultivate more land and do it more efficiently than the individual peasants. Hence, along with the state farms, they are taking the leading place in increasing the area under cultivation. It is estimated that of the total net increase (3,670,000 hectares, or 9,065,000 acres) in the grain area harvested in 1929, about three-fourths was accounted for by state and collective farms and only one-fourth by individual peasants.

Another manner in which the state is exercising an increasing influence on agriculture is through the extension of the system of advance contracting for crops, which

is assuming greater importance. This system, which provides for advances to peasants in the form of seeds, implements, manufactured products, fertilizers and money on the crop still unharvested, serves the twofold purpose of increasing agricultural production and facilitating the grain purchasing campaign. Over 21,000,000 hectares of the 1929 grain crop alone were contracted for, which was considerably more than had originally been scheduled.

The purchases of grain from peasants and from state and collective farms by coöperative and state marketing agencies, which supply urban communities and the needs of the export trade, were low in the fall of 1928 and the spring of 1929, due to the rather poor crop of 1928, but showed a notable improvement in the latter part of 1929. The total grain purchases for the agricultural year ending June 30, 1929 amounted to 9,418,000 metric tons, as compared with 10,106,000 tons the year before and 10,598,000 tons in 1926-27, when the Soviet Union exported certain quantities of grain. Aside from the reduction in the total crop, grain procurements for 1928-29 were also affected adversely by the fact that crops were especially poor in the Ukraine and in the Northern Caucasus, the two regions which usually supply the bulk of procurements. They were good in some sections, such as the Siberian and Far Eastern Regions, which are far removed from the most thickly populated sections of the country and have comparatively poor transportation facilities.

In comparing the purchases of the 1928 crop with those of the previous years, the fact must be taken into account that the population of the Soviet Union is growing at the rate of over 3,500,000 per year. The unsatisfactory results of the grain procuring campaign served to create considerable difficulties with regard to supplying the needs of the population. While the situation did not necessitate resorting to importation, a stricter regulation of the supply of bread and certain other products was required. The produce cards which were introduced to meet the situation gave the urban population the opportunity of obtaining

articles of prime necessity in adequate quantities and at comparatively low prices.

The early estimates of the crop of 1929 were rather pessimistic and it was predicted that the grain procurements for the new agricultural year, beginning July 1, 1929, would not be much larger than those of the previous year. The actual results of the grain purchasing campaign, however, proved extremely satisfactory, due both to the better condition of the crops and to the extension of state and collective farming. The program of grain procurements for 1929-30 called for purchases exceeding those of 1928-29 by 4,000,000 tons, but this figure was later increased by another 500,000 tons, making the program almost 14,000,000 tons. While ordinarily the grain purchasing campaign lasts until March and even April (*i.e.*, as long as ten months), the Commissariat for Trade decided to shorten its duration in 1929-30 in order to reduce overhead expenses and to assure a timely supply of grain for the needs of the population and for reserve.

The program originally called for the completion of the campaign by the beginning of February. But by December 1, a total of 12,810,000 metric tons of grain had been purchased, the plan being completely fulfilled, with the exception of the grain to be received as payment for milling. These purchases exceeded those for the corresponding five months (July-November) of 1928-29 by 170 per cent, and of 1926-27, when grain procurements were at their peak, by 130 per cent. By January 20, 1930 the program was exceeded by seven per cent.

The success of the grain procuring campaign last year is a significant indication of the progress made by Soviet agriculture in 1929. The groundwork has been laid for carrying out and even exceeding the great program of agricultural development outlined by the government.

Industrial Production

Soviet industry in 1928-29 showed record progress. The total value of industrial production (figured in prices of 1926-27) amounted to 22,292,000,000 rubles (\$11,458,-

000,000) as compared with the program of 21,164,000,000 rubles. The surpassing of the plan is significant inasmuch as the program called for a rate of growth exceeding that of the two preceding years.

The period of restoration of Soviet industry to the pre-war level was completed in 1926-27. During this period a high rate of growth was maintained, largely through putting into operation idle equipment. Thereafter it was expected that the rate of growth would decline progressively until it reached a figure close to the average pre-war rate of expansion of about seven per cent. In the year 1926-27 the production of state large-scale industry increased by 18.2 per cent—a smaller gain than in the preceding years. Since then, however, contrary to expectations, the tempo of growth has shown a gain and in 1927-28 an increase of 22.5 per cent was recorded. The Five-Year Plan figured on a gain of 21.4 per cent for 1928-29, but the actual gain in the output of state large-scale industry was 23.4 per cent. The revised schedules for the fiscal year 1929-30 call for a further gain in production of 32.1 per cent, as against the original Five-Year Plan figure for the second year of the period of 21.5 per cent.

A significant indication of the momentum gained in Soviet industrial expansion was the fact that in 1928-29, unlike previous years, production increased from quarter to quarter. Usually the first half of the fiscal year, comprising the winter months, shows a greater output than the second half-year, when summer vacations, repairs, etc., necessitate a slowing down. The improved results in 1929 were in part due to the measures taken to spread vacations and repair work more evenly during the year, but primarily were accounted for by the progressively greater tempo of industrial growth. In accordance with the government program, the development of producers' goods industries, *i.e.*, those industries which make for further industrial expansion, was substantially greater than that of the industries producing consumers' goods, the respective rates of expansion being 26 and 21 per cent.

The following table shows the production of state large-

scale industries for the fiscal years 1927-28 and 1928-29 in comparison with the program for the latter year, given in the Five-Year Plan:

TABLE D.—PRODUCTION OF STATE LARGE-SCALE INDUSTRY,
1927-28 AND 1928-29

	1927-28	1928-29	
		Program	Actual
Oil, metric tons.....	11,815,000	13,200,000	13,682,000
Coal, metric tons.....	35,400,000	41,100,000	40,600,000
Iron ore, metric tons	6,010,000	7,100,000	7,120,000
Steel, metric tons.....	4,150,000	4,730,000	4,720,000
General machinery, in rubles, at prices of 1926- 27	591,000,000	737,000,000	792,000,000
Agricultural machinery, in rubles, at prices of 1926- 27	148,000,000	210,000,000	211,900,000
Bricks, pieces.....	1,691,000,000	2,600,000,000	2,880,000,000
Cement, metric tons.....	11,900,000	14,000,000	14,400,000
Paper and cardboard, met- ric tons	315,000	410,000	411,000
Cotton cloth, meters	2,695,000,000	2,970,000,000	2,952,000,000

The metal industry, the development of which is one of the principal tasks of the Five-Year Plan, still lagged somewhat behind the program, although showing substantial progress over the preceding years. Pig iron production amounted to 4,017,800 metric tons, 22 per cent over 1927-28, but about 2 per cent short of the schedule. The production of steel, on the other hand, was only 0.2 per cent below.

Coal production was 14.6 per cent above that of 1927-28 but 500,000 tons behind the schedule. The oil industry made excellent progress, exceeding the plan by 3½ per cent.

The production of most types of machinery, an industry which had been at a low ebb in pre-war Russia, was substantially above the program in 1928-29. The total output of machinery, other than agricultural, was 34 per cent more than in 1927-28. The production of mining, metallurgical and oil equipment, in particular, showed a considerable gain. There was a decline of 15 per cent in the production of textile machinery.

The output of steam turbines, amounting to 120,000 kilowatts, while below the program, was $3\frac{1}{2}$ times that of 1927-28. Boiler production, totaling 135,000 square meters of heating surface, was 40 per cent above that of 1927-28. The output of railway locomotives increased 22 per cent and totaled 559 units. That of large freight cars, a new industry for the Soviet Union, was 3,260 units—40 per cent more than in the previous year. The output of automobiles, although totaling only 1,900 units, was nearly $2\frac{1}{2}$ times that of 1927-28. The number of tractors produced, 3,229 units, compared with 1,218 in 1927-28.

A satisfactory feature of the industrial developments in the first year of the five-year period was the large growth in the output of the principal construction materials, of which there is a great shortage. The elimination of this shortage is essential for the success of the building program of the Five-Year Plan. The production of cement was 21 per cent more than in the previous year, while bricks produced by all enterprises increased 70 per cent. In spite of the fact that the program was exceeded for both products, the demand could not be satisfied.

The consumers' goods industries fell somewhat short of the program, which was accounted for, in great measure, by the fact that the production of agricultural raw materials for industry was below the schedule in 1928. In particular, the production of sugar was markedly below the program. The output of cotton cloth, however, was practically up to schedule and was 9.5 per cent more than in 1927-28.

Although the quantitative results were satisfactory in 1929, industry failed to live up to the plans for raising the quality of goods and reducing production costs. In a number of industries the quality of production showed a deterioration. Production costs during the year were reduced only about 5 per cent, as against the 7 per cent called for in the plan.

This failure was due partly to the employment of a larger number of workers than called for by the plan (2,298,000 workers in state large-scale industry as against the program of 2,194,000), as well as to a larger increase

in wages than scheduled. The productivity of labor increased 14.5 per cent as against the plan of 17.3 per cent. During the second half of the year, however, a marked improvement took place along these lines, most of the reduction in costs which were made being effected during that period.

The year was marked by three important new developments in industry, the significance of which will be far-reaching in the next few years. There was, firstly, the introduction of the seven-hour labor day, accompanied in many factories by the simultaneous introduction of the three-shift system. Secondly, the beginning of the introduction of the continuous work-week, whereby factories, offices, etc., operate every day in the year, with the exception of five legal holidays, although the number of working days for each employee is no greater than before. Thirdly, the so-called "socialist competitions," which have extended throughout the country, made their appearance. These consist of contests between different industrial establishments to increase production, reduce costs, etc. Such competitions have had a marked effect on labor discipline and have helped to raise production in many enterprises. The organization of corps of worker "shock brigades" which are sent to factories to set examples to other workers has also been effective in raising labor morale.

The large expansion of the producers' goods industries in the first year of the Five-Year Plan period has prepared the ground for the further industrialization of the country. The amount of capital investments for new construction and improvements in industry in the fiscal year 1928-29 totaled 1,679,000,000 rubles (\$864,690,000) as compared with 1,325,000,000 rubles in 1927-28 and 1,090,000,000 rubles in 1926-27. Of the total investments in 1928-29, over 73 per cent was expended for the development of producers' goods industries, the remainder going for consumers' goods and miscellaneous needs. It is significant that while the expenditures for the first group of industrial enterprises increased 30.4 per cent, those for the consumers'

goods group declined 0.5 per cent. Over one-third of all investments went into entirely new enterprises while the remainder went for expansion and capital repairs in existing enterprises and workers' housing. Investments in scientific research and exploration work exceeded 65,000,000 rubles in 1928-29, as compared with 24,000,000 rubles in 1927-28.

Electrical Development

Electric power development in 1928-29 kept pace with industrial growth. In accordance with the Soviet power policy, the development of regional public utility plants was more marked than that of factory power stations. The latter, however, also showed a large expansion, their capacity increasing from 924,000 kilowatts on October 1, 1928 to 1,095,000 kilowatts a year later—a gain of 18.5 per cent—and their output showed a gain of 21.9 per cent. Regional power plants, which have become of importance only during the last six or seven years, showed a 25.4 per cent increase in capacity, going from 528,000 to 662,000 kilowatts during the year. The output of these stations increased 32.3 per cent, reaching a total of 2,400,000,000 kilowatt-hours.

The total capacity of all power plants on October 1, 1929 was 2,155,500 kilowatts, as against 1,792,500 kilowatts the year previous. The output of all stations, including regional, industrial, municipal, rural and railway, amounted to 6,465,000,000 kilowatt-hours, a gain of 25.3 per cent over 1927-28 and more than three times the total for 1913. The investments made in regional plants amounted to about 369,000,000 rubles (\$190,000,000) in 1928-29, which compares with 269,000,000 rubles the year before.

Internal Trade

The increased production of both agriculture and industry naturally resulted in a substantial expansion of internal trade in 1928-29. The total quantity of goods put on the market was valued at 23,179,000,000 rubles (\$11,937,700,000)—16.4 per cent more than in the preced-

ing year. Aside from the increase in production, the quantity of goods handled by trading enterprises was swelled through the marketing of a greater proportion of agricultural production than in previous years, partly as a result of the expansion of state and collective farms.

A significant feature of the development of internal trade in 1929 was the large reduction in the number of private trading enterprises and in the proportion of trade handled by them. On the other hand, a greater rôle was played by coöperative enterprises. The total turnover for the year was 50,322,900,000 rubles or 30 per cent more than in 1927-28.*

State trading organizations handled 30 per cent of the total business in 1918-19 as against 31 per cent in 1927-28, in spite of a 28.6 per cent increase in their trade turnover. This decline contrasted with the situation of coöperative enterprises, which handled about 63 per cent of the total trade of the country in 1928-29, as compared with 57½ per cent in the preceding year. The share of coöperatives in retail trade amounted to over 67 per cent, as against 60 per cent in 1927-28.

The total number of retail outlets in the U.S.S.R. on October 1, 1929 was estimated at 308,400 (or 37,300 less than on October 1, 1928). This decline was accounted for by the sharp reduction in the number of private outlets, which dropped from 201,200 to 131,900. The number of state and coöperative outlets increased during the year from 144,500 to 176,500. In this connection it must be borne in mind that the private stores are usually much smaller than state and coöperative stores, which often consist of a number of departments. Nevertheless, it is generally recognized that the present system of retail outlets is far from adequate for the needs of the country. The situation is particularly acute in rural communities where the number of outlets on October 1, 1929 was estimated at 142,200 or 24,000 less than in the cities, although the agricultural population is more than four times as large as the urban.

* This covers the total business done, with the exception of initial sales by producers.

The shortage of manufactured goods, particularly in the cities, a fact often commented on in the foreign press, continued to manifest itself. The peasants, who number 128,000,000, now purchase many articles, the sale of which in the villages was virtually unknown before the war. This is especially true of better-grade textiles, factory-made footwear and many hardware, chemical products, etc. For instance, while the pre-war production of rubber shoes was 27,885,000 pairs (0.199 pairs per capita), last year the output was 42,200,000 pairs (0.279 per capita), and yet there is now a greater shortage in the cities than before the war, due to greatly increased buying by the peasants. An important element contributing to this situation is the fact that in 1928-29 the peasants received 22.9 per cent more money for their products than in the previous year.

The sales of cotton and woolen goods and ready-made clothing increased 38 per cent in the villages in 1929 and only 4 per cent in the cities. In 1928-29 the villages for the first time made sizable purchases of factory-made clothing, taking 79,000,000 rubles' worth, or twelve times the figure of 1927-28. In the five months July 1-November 30, 1929, manufactured products valued at 1,100,000,000 rubles were shipped to rural communities, 43 per cent more than in the corresponding period of 1928.

Transportation

The transportation system increased its operations considerably during 1928-29 to take care of the greater volume of goods placed on the market. Shipments of agricultural products showed an especially large increase, due to the necessity of transporting grain from the Siberian and Far Eastern Regions, where the crop of 1928 was particularly large, and to the excellent procurements of grain during the last months of 1928-29. Railway freight and passenger operations not only exceeded, by 21 and 25 per cent, respectively, the figures of the preceding year, but were also considerably above the program. The railway system also succeeded in reducing operating costs over 15 per cent.

Labor

Labor conditions improved in a number of respects. The total number of persons working for hire increased 6 per cent in 1928-29. While unemployment showed a further increase, due to the movement of peasants to the cities, its rate of increase was substantially less than in previous years. The number of unemployed on October 1, 1929 was estimated at 6.4 per cent greater than a year before while an increase of 31 per cent was recorded in 1927-28. There was a reduction in unemployment during the second half of 1929, the number of registered unemployed totaling 1,241,000 on Dec. 1, 1929 as against 1,298,000 on Aug. 1.

The average wages of all workers, including agricultural laborers, increased 8.5 per cent, as against 7.8 per cent in the plan. Wages of industrial workers gained 9.7 per cent as compared with the program of 7.3 per cent. Due to the rise in retail prices, however, the gain in real wages was not as large as scheduled, amounting only to 4 per cent. The introduction of the 7-hour labor day was continued and by the end of the year large-scale industry reported nearly half a million workers on the shorter day, as against 132,000 workers a year before.

Budget and Currency Circulation

The financial system of the country showed an expansion corresponding with the needs of the developing national economy. The federal budget for 1928-29, of 7,763,140,000 rubles (\$3,997,945,000), represented an increase of about 15 per cent over that of 1927-28. When the budget was ratified it was recognized that it would be difficult of fulfillment and doubt was expressed in some quarters as to the ability of the Commissariat for Finance to carry out the schedules. According to the report of the Commissariat, as of November 1929, the actual revenues for 1928-29 exceeded the estimates (by 3.6 per cent), as had also been the case for several previous years. The total receipts for 1928-29 amounted to 8,036,889,000 rubles (\$4,139,055,000), practically every important class of revenue surpassing the esti-

mates. The total receipts were 18.9 per cent greater than those of 1927-28.

The income from direct taxes was 1,795,922,000 rubles, or 5.6 per cent more than scheduled. The single agricultural tax contributed 442,912,000 rubles and the income tax 284,599,000 rubles. Indirect tax receipts (excise and customs duties) amounted to 2,055,229,000 rubles, an excess of 3.3 per cent over the estimate, while revenues from state properties and enterprises, amounting to 808,940,000 rubles, were 2.7 per cent above the estimate.

In spite of the large popular subscriptions to various internal bond issues, particularly the industrialization loans, the budget receipts from loans (693,900,000 rubles) were 13.3 per cent below the estimate. Incidentally, a total of 294,127,000 rubles was expended during the year for debt service (redemption and interest payments), so that the net income from borrowings amounted to only about 400 million rubles. The receipts of the Commissariat for Transportation, due to the unusually large operations of the railway system, exceeded the program by 9.2 per cent.

The actual expenditures for 1928-29 were 3.3 per cent above the estimate but more than 15,000,000 rubles less than revenues. Besides, a special state reserve of 50,000,000 rubles and reserve funds of the Council of People's Commissars of the U.S.S.R. and the constituent republics totaling 149,616,000 rubles were on the budget. The expenditures for administrative purposes and for the Commissariat for Army and Navy amounted to 1,102,576,000 rubles for the year—0.2 per cent above the estimate. Those for the financing of the national economy rose to 2,000,260,000 rubles (\$1,030,135,000)—4.1 per cent more than scheduled and one and one-half times as great as in 1927-28.

Currency circulation during the first half of 1928-29 showed comparatively small fluctuations. During the third quarter, however, which marked the beginning of the crop contracting season, there was an increase in circulation of 215,200,000 rubles. The beginning of the grain purchasing campaign in the fourth quarter necessitated a further rise, the currency circulation on October 1, 1929 being 671,-

400,000 rubles more than in the year previous and amounting to 2,642,200,000 rubles (\$1,360,733,000).

In October and November 1929 the currency in circulation continued to increase. In this connection it should be recalled that the quantity of grain purchased by state and coöperative agencies during the five months July-November 1929 was nearly three times that of the corresponding five months of 1928 and more than double that of any previous year. Also, the volume of goods put on the market and the trade turnover, wages, etc., were considerably above those of the preceding year.

The currency circulation showed a drop during December 1929 and continued to decline in January 1930. The circulation of State Bank notes on February 1, 1930 amounted to 1,525,741,250 rubles (\$785,675,000) as against 1,598,420,850 rubles on November 16, 1929, when it was at the peak. According to the law the State Bank notes must be backed by at least a 25 per cent reserve, consisting of precious metals and stable foreign currency. On October 1, 1928, the ratio of this reserve was 25.9 per cent, on October 1, 1929, 25.4 per cent and on February 1, 1930 25.6 per cent.

The large increase in currency circulation was not accompanied by any unusual rise in prices. While wholesale prices for agricultural products increased as a result of the poor crop of 1928 and the raising of the prices paid to peasants by state and coöperative procuring organizations, there was a slight decline in those of products of mining and manufactures. This was due largely to the fact that the prices charged by state and coöperative enterprises, which handled over 80 per cent of the total retail trade last year, are regulated by the government. Neither did the expansion of the currency have any bearing on commercial relations with foreign countries. Soviet currency can neither be exported nor imported and is not quoted on foreign exchange markets. The rate of exchange remains stable in the Soviet Union, all foreign commercial transactions being performed in foreign currency.

Banking

The total resources of all the banking institutions in the Soviet Union increased from 8,951,000,000 rubles on October 1, 1928 to 11,396,000,000 rubles on October 1, 1929—a gain of 27 per cent. Both short-term and long-term loans and discounts showed substantial gains, outstanding long-term loans increasing from 3,265,000,000 to 4,712,000,000 rubles and short-term loans and discounts from 4,229,000,000 to 4,983,000,000 rubles during the year. The major part of the financing fell to the share of state industry, which increased its indebtedness to the banks by 920,000,000 rubles during the year, most of which consisted of long-term loans. The financing of agriculture increased 475,000,000 rubles and other branches of national economy also reported gains. The funds received from the federal budget and distributed by the banks played the largest part in financing.

Current account and other deposits of the banking system showed a substantial expansion, increasing from 1,900,600,000 rubles on October 1, 1928 to 2,433,400,000 rubles on October 1, 1929. Deposits of industrial enterprises increased 140,000,000 rubles. The number of banking institutions on October 1, 1929 was 1,197. The resources of the State Bank increased during the year from 4,371,397,000 rubles to 5,405,176,000 rubles on October 1, 1929. Savings bank deposits increased 144,500,000 rubles during the year and reached a total of 507,000,000 rubles in October 1929.

*New Construction **

Although construction activity in 1928-29 was characterized chiefly by the initiation or continuation of work on many large enterprises, nevertheless nearly one hundred new important industrial plants with an annual output valued at 170,000,000 rubles were completed and started operations during the year. Some of the principal achievements of the year in this respect were the completion of

* See table IX, pp. 116-117, for list of plants under construction.

the following enterprises (some of which are to be further expanded) : Grozny-Tuapse oil pipe line, part of the Baku-Batum pipe line, Syas cellulose combine, Moscow electro-technical plant, Korsak-Pai copper smelter, southern section of the Turkestan-Siberian Railway, Balakhny paper mill, Kondopoga paper mill and power plant, the first blast furnace of the Kerch steel mill and the first department of the Rostov agricultural machinery plant.

Aside from the work on new industrial enterprises, many existing factories, mills and mines were expanded, in part through the installation of additional equipment. The average number of blast furnaces in operation was 70 in 1928-29 as against 62 the year previous; of open-hearth furnaces, 205 as against 192; and of rolling mills, 284 as against 276. The average number of oil wells in operation was 4,353—12 per cent more than in 1927-28. The number of saw-mill frames was 730, or 10 per cent more than in the previous year.

The average number of cotton spindles in operation in 1928-29 was 7,191,900—5.8 per cent more than in the preceding year; of looms 185,100—a gain of 6 per cent. In the woolen industry the number of spindles at work was 318,000 and of looms, 9,753—also a marked increase over the previous year. The number of coal cutters employed in the mines of the Donugol Coal Trust increased 37 per cent during the year, reaching a total of 562.

The great scope of the building operations under way during the first year of the five-year period is shown by the fact that the total expenditures for industrial, housing, and other construction operations, not including the value of equipment installed, was close to five billion rubles and was 11 per cent greater than in the previous year. More than four-fifths of this amount was used for new buildings and structures and the remainder for capital repairs, reconstruction and expansion. Expenditures for the construction of industrial buildings alone totaled 885,000,000 rubles; transportation structures required 556,000,000 rubles and housing in cities 758,000,000 rubles, the remainder being accounted for by construction in rural

communities, the needs of electrical development, and building for educational, municipal and health services.

Foreign Trade

The fiscal year 1928-29 was, on the whole, one of the most successful in Soviet foreign trade. However, owing to the unfavorable balance incurred in the preceding year it was necessary to curtail imports somewhat. Exports from the U.S.S.R. reached a post-war record of 890,000,000 rubles (\$458,000,000), exceeding those for 1927-28 by 15 per cent. Imports amounted to 837,000,000 rubles (\$431,000,000—12 per cent below the record figure of the preceding year.* During the first quarter of 1929-30 Soviet exports increased 24 per cent and imports 22 per cent over the same three months of the preceding fiscal year.

A favorable foreign trade balance of 53,000,000 rubles was attained in 1928-29, while the first four months of the following fiscal year netted an additional favorable balance of 21,000,000 rubles. In 1927-28, due to the failure of grain exports, an adverse balance of 167,682,000 was incurred, while in 1926-27 there was a favorable balance of 93,000,000 rubles. An important element in Soviet foreign trade, which is not reflected in the customs statistics, is the export of gold. The Soviet Union, as one of the world's leading gold-producing countries, is able to cover a substantial so-called unfavorable trade balance by shipments of its own gold.

Exports in 1928-29 were far below the total of 1,520,135,000 rubles (\$782,800,000) attained by the Russian empire in 1913, the decline being accounted for by the principal pre-war export items, wheat and rye, which do not appear at all among 1928-29 exports. Excluding grain products, exports for 1928-29 were less than 3 per cent below the 1913 total in value. Not only was no wheat nor rye exported from the Soviet Union in 1928-29 and very little in 1927-28, but the rôle of agricultural exports generally was small in comparison with 1913. In 1927-28 the exports of products of mining and manufac-

* See table XIII, p. 130.

ture (including lumber) were only slightly larger than those of agricultural and animal products. In 1928-29 the former group increased 28 per cent, while agricultural exports declined 3 per cent, with the result that manufactured and mined products constituted 57.6 per cent of the total.

The principal item among farm and animal products for 1928-29 was furs, which made up 109,119,000 rubles—a decline of 8.6 per cent from the preceding year. Butter exports valued at 33,713,000 rubles came next, then flax and tow, eggs, grain (other than rye and wheat), oil cake, seeds, meat products, casings, poultry and game, fish products, and bristles. While the total value of agricultural exports declined from the preceding year, the value of products other than grain, oil cake and seeds increased 0.4 per cent.

Among the exports of mined and manufactured products, lumber replaced oil as the principal item, in spite of a 24 per cent increase in the value of oil products exported (the tonnage of oil exports increased 30 per cent). The value of lumber exports for 1928-29 amounted to 137,-154,000 rubles—46 per cent more than in 1927-28—and of oil products, 132,614,000 rubles. The next largest item was cotton cloth, which is exported almost exclusively to Near Eastern countries, a historical market for Russian textiles. Other important products exported were manganese ore (which gained 28.6 per cent), iron ore, asbestos and coal—all of which exceeded the figures of the preceding year.

The exports of oil reached a record total of 3,618,500 metric tons—practically four times those of 1913. The largest customer for Soviet oil was England, which took 725,500 metric tons—87 per cent more than in the preceding year. Italy, Germany, France and Spain were next in order.

The principal market for Soviet lumber in 1929, as in preceding years, was also England. Of the total lumber sales, England absorbed 66 per cent, Holland 14 per cent and Germany 9 per cent. The United States accounted for only 1 per cent of the total.

On the import side, a significant fact was the further increase in the share of imports of producers' goods from 84.3 to 86.7 per cent. The total imports of consumers' goods for the year amounted to 107,071,000 rubles, of which the bulk were food products, either not produced or obtainable only in small quantities in the Soviet Union, such as tea, rice, oranges and lemons, herrings, dried fruits, etc. The imports of these products declined considerably.

The value of imports of producers' goods for 1928-29, 719,905,000 rubles, was 9.6 per cent below the total for 1927-28. The decline affected all groups of imports, particularly industrial equipment. The one important exception was in imports of agricultural machinery and implements, which doubled in comparison with the preceding year and reached a total of 43,478,000 rubles. A large part of this consisted of tractors shipped from the United States. Imports of industrial and transportation equipment amounted to 210,291,000 rubles (making up 25 per cent of the total imports) as against 255,825,000 rubles in 1927-28.

Receipts of industrial raw materials declined 10 per cent, mainly on account of increased domestic production, particularly drastic reductions being recorded for hides and skins, non-ferrous metals, and cotton. Cotton imports declined from 154,215,000 rubles to 131,796,000 rubles, while non-ferrous metals dropped to 46,670,000 rubles—a reduction of nearly 20 per cent. The imports of semi-manufactured goods, including leather, paper and cardboard, tanning materials, dyes and paints, etc., declined 16.6 per cent and amounted to 97,682,000 rubles. (Table XIII, on page 130, shows the amount of the principal imports and exports for 1928 and 1929.)

Germany was the leading country in Soviet foreign trade in 1928-29, with a turnover of 397,002,000 rubles, of which Soviet imports from that country made up over 47 per cent. Great Britain came second with a turnover of 236,841,000 rubles, of which Soviet imports were about 19 per cent. Soviet trade with the United States totaled 191,394,000 rubles, imports from the United States constituting 80 per cent (see chapter IV on Soviet-American

Trade, for details). Persia was fourth in rank with 137,827,000 rubles, of which imports totaled 46 per cent. Next in order came Latvia, with 85,200,000, France 73,564,000 rubles, Italy 38,381,000 rubles, Egypt 36,331,000, China 31,746,000, Western China 29,824,000, Turkey 29,566,000, Poland 29,472,000 and Japan 21,442,000 rubles.

During the year commercial relations between the Soviet Union and foreign countries showed a substantial improvement. Outstanding in this connection was the resumption of diplomatic relations with England, which should have a favorable influence upon the economic relations of the two countries. In December 1928 a protocol was signed between the Soviet Union and Germany, the purpose of which was to elucidate and to develop the Soviet-German trade agreement of February 12, 1925. Trade agreements were also concluded with Greece and Estonia during the year, and a customs convention with Persia. Other commercial agreements are in operation with Italy, Norway, Latvia, Persia, Turkey and other countries.

The financing of Soviet foreign trade, by both foreign and Soviet firms and banks, increased substantially during the year. The outstanding credits of Soviet banks for financing exports were estimated at 582,900,000 rubles as of July 1, 1929, as compared with 466,800,000 rubles on October 1, 1928, the beginning of the fiscal year. The financing of imports by Soviet banks showed a decline. However, in spite of the decline in imports, foreign credits on imports increased 10 per cent.

CHAPTER IV

SOVIET-AMERICAN TRADE

THE recent developments in Soviet economy have been reflected in the growth of Soviet-American trade. The outstanding feature of this trade in 1929 was the large increase in the purchases of industrial and agricultural machinery. While in earlier years more than half the purchases in the United States for the U.S.S.R. consisted of raw materials (mostly cotton), in 1928-29 these purchases amounted to only one-third the total. Semi-manufactured and consumers' goods constituted about 3 per cent and the remainder was made up of industrial and electrical equipment, agricultural machinery and supplies and automotive equipment.

Expansion of Soviet-American Trade

The growth of Soviet business with the United States was particularly rapid during the second half of the fiscal year. For this reason both Soviet and American customs statistics for the year, which give the actual imports and exports, show lower totals than the figures for sales consummated and orders placed. According to Soviet customs figures, Soviet-American trade in 1928-29 amounted to 191,394,000 rubles (\$98,568,000), of which imports were 152,925,000 rubles and exports to the United States 38,469,000 rubles, the unfavorable trade balance amounting to 114,456,000 rubles (\$58,944,840). The United States was the only important country with which the Soviet Union incurred an unfavorable balance in 1928-29. There was a marked decline in shipments to the Soviet Union, due mainly to reduced cotton purchases as a result of the increase in the domestic production of cotton.

A different picture is obtained if the figures for the purchases of American products for shipment to the Soviet Union and the deliveries of Soviet products to purchasers in this country are taken, rather than the statistics of actual exports and imports. Soviet-American trade for the fiscal year, as measured by purchases and deliveries, amounted to \$138,400,159 *—an increase of nearly 21 per cent over the turnover of the preceding year (\$113,539,000) and more than three times the average for the last five pre-war years, \$45,469,000.

The total turnover in the six years since the resumption of regular trade relations between the two countries has amounted to over \$600,000,000.

Soviet Purchases in U. S.

The purchases for the twelve months ending September 30, 1929, totaled \$107,651,115, as compared with \$91,231,048 in 1927-28—an increase of 18 per cent, in spite of the fact that purchases of raw materials were nearly \$22,000,000 less than in 1927-28. Orders for consumers' goods also declined slightly, while those of semi-manufactured products increased by over \$1,000,000. On the other hand, orders for industrial, power plant, automotive and agricultural equipment attained the record figure of \$67,605,937, as compared with \$32,211,298 in 1927-28, \$19,099,598 in 1926-27 and \$12,494,106 in 1925-26. Consumers' and miscellaneous goods constituted only 1 per cent of the purchases.

The considerable gain in trade operations toward the latter part of 1929 is shown by the fact that the shipments of the Amtorg Trading Corporation to the U.S.S.R. for October, November and December 1929 (\$29,000,000) exceeded those for the whole of the preceding nine months and were seven times as large as those for the corresponding quarter of 1928. They included much of the agricultural machinery purchased in 1928-29 as well as industrial equipment. Still larger, proportionately, were the ship-

* Excluding sales for future deliveries and reexports of Soviet products to the United States.

ments in January 1930. The activities of the American Export Lines, an American steamship company with which a contract providing for a regular freight service between New York and Soviet Black Sea ports was recently concluded by the Am-Derutra Transport Corporation (in charge of the bulk of shipping operations to and from the Soviet Union), furnish another indication of the rapid growth in trade. In September 1929, one sailing was made, in October and November three in each month, in December four, in January 1930 seven. A contract was recently concluded also with the Scantic Line, calling for regular sailings to Leningrad and Murmansk. These contracts are supplemented by sailings of specially chartered boats of other lines.

Figuring by calendar years, the Amtorg placed orders valued at \$94,500,000 in 1929—nearly three times its purchases in 1928, which amounted to \$32,500,000. The total Soviet-American trade, as estimated on the basis of purchases and sales, amounted to \$155,000,000 in the calendar year 1929, as against a total of \$101,000,000 the previous year.

The Amtorg Trading Corporation is the leading firm engaged in Soviet-American trade. Other organizations are the All-Russian Textile Syndicate, Centrosoyus-America, Inc. and Selskosojus-America, Inc. (doing business on behalf of Soviet consumers' and agricultural producers' co-operatives, respectively), and the Amkino Corporation, which buys and sells Soviet films—all of New York City. The All-Russian Textile Syndicate confines itself to the purchasing of cotton and textile machinery for the Soviet textile industry.

The direct sales of Soviet products in this country, aside from the Amtorg, Selskosojus and Centrosoyus, are handled by a few American firms which have special contracts for certain products, such as furs, manganese, and precious stones. In addition, some Soviet products are reëxported from Germany and other European countries. An important feature of Soviet-American economic relations are the contracts between the Soviet Naphtha Syndicate and the

Standard Oil Company of New York and the Vacuum Oil Company, providing for large shipments of Soviet petroleum products to the Eastern markets of the American companies.

The total value of raw materials purchased by the Amtorg and the Textile Syndicate in 1928-29 was \$36,102,120, as compared with \$57,999,513 in 1927-28. Cotton purchases made up 86 per cent of the total, amounting to \$31,161,382. In spite of a 40-per cent decline in purchases, the Soviet Union was still one of the important markets for American cotton. Crude rubber purchases fell to one-fifth those of 1927-28. The purchases of non-ferrous metals, on the other hand, increased some 14 per cent.

While the orders for semi-manufactured goods placed by Amtorg, Centrosoyus and Selskosojus in 1928-29 were 81 per cent greater than in the preceding year, their share of the total Soviet purchases here was rather insignificant—only about 2½ per cent. The principal semi-manufactured products purchased were rosin (which gained 68 per cent), tin plate, abrasives, wire, carbon black, paper, paints and dyes, and various other chemical products. The total value of the purchases of semi-manufactured products in 1928-29 was \$2,690,138 as compared with \$1,491,398 in the preceding year. U. S. customs statistics indicate a large increase in American exports of rosin to the Soviet Union (Soviet Russia in Europe only) in 1929 over the preceding year (from \$336,693 to \$1,646,441). The Soviet Union last year was the third largest market for American rosin, coming after the United Kingdom and Germany.

The purchases of consumers' goods and office equipment amounted to \$932,625 in 1928-29 as against \$1,141,513 in 1927-28. The principal items were typewriters, adding machines, etc., which increased 28 per cent over the preceding year. Most of these orders were placed by Centrosoyus.* Consumers' goods included mainly supplies for Kamchatka, which depends upon the United States for a number of

* Centrosoyus recently established a bureau for studying American office methods.

products, due to the difficulties of transportation from other parts of the Soviet Union.

Industrial and Electrical Equipment

In regard to industrial and electrical equipment, impressive gains were recorded for all types, the total purchases of \$34,054,061 being nearly 180 per cent greater than in 1927-28. In 1913 exports of such equipment from the United States to Russia amounted to only \$1,849,000. While purchases of this group have been increasing from year to year since 1925-26 (when they amounted to \$4,085,742), the fiscal year 1928-29 marked a turning point in that it definitely established such equipment as the most important class of Soviet imports from this country. It is significant that this gain was recorded in spite of a 21.4 per cent decrease in the total imports of industrial equipment into the Soviet Union in 1928-29. Purchases of industrial and electrical equipment in Germany, which is still the chief source of these products for the U.S.S.R., amounted in 1928-29 to 72,173,000 rubles (\$37,170,000) as against 58,418,000 rubles in 1927-28—a gain of 24 per cent.

For the calendar year 1929 American industrial and electrical equipment bought exceeded \$40,000,000—almost 3¼ times the purchases of 1928. The purchases during the last quarter of the calendar year amounted to \$12,500,000.

Of the total Soviet purchases in the United States in 1928-29 industrial equipment alone made up nearly 32 per cent, as against 13 per cent in 1927-28. The value of purchases of equipment for the oil and metal industries alone exceeded the total amount spent for industrial equipment in 1927-28.

Not only was there an increase in the orders for industries which have already made purchases of American equipment, but many Soviet industries made their appearance on the American equipment market for the first time. Among these the most important were the automobile and tractor industries, which placed orders in 1928-29 for \$5,748,148, largely for equipment to be used in the Putilov and Stalingrad tractor plants, the Amo automobile factory

and two automobile assembly shops. However, in the first quarter of the following fiscal year (October-December, 1929) the purchases for Soviet automobile and tractor plants amounted to over 80 per cent of this figure. An indication of the importance which these industries, which are only in their infancy in the Soviet Union, may have for American equipment manufacturers is given by the fact that orders were placed for equipment for five complete large foundries. More than \$2,000,000 worth of dies, tools, and patterns was purchased in the Detroit and surrounding districts. Equipment for the Stalingrad plant was ordered from 176 American firms; American architects (Albert Kahn, Inc.) designed the buildings; an American company (McClintic Marshall Co.) supplied the structural steel, and American engineers are supervising the construction. In 1929 over \$6,000,000 worth of machine tools and forge equipment was purchased for the Soviet Union, more than tripling the figure of the previous year. These purchases were made mainly in the Cleveland, Cincinnati, Detroit and Chicago districts.

The gain in the purchases of oil equipment has also been especially large. These purchases in 1928-29, largely for refinery equipment, were just below ten million dollars, and over seven times the figure of 1927-28. Among the other important industries for which equipment was purchased in the United States in 1928-29 may be mentioned the mining and quarrying, construction, electro-technical, forging, paper, lumber, silicate, chemical, leather, metallurgical, watch-making, sewing machine, canning, food, cotton-ginning and textile industries.

According to Department of Commerce statistics the Soviet Union was the fifth largest importer of American industrial machinery in 1928, being exceeded in the western hemisphere only by Canada, Mexico and Argentina, and in Europe only by the United Kingdom. In 1927, Soviet Russia was ninth in rank, in 1926 tenth, and in 1925 fourteenth.

For many types of industrial equipment the Soviet Union was one of the two leading importers, even in 1928. These

include wool carding and weaving machines, excavators (including power shovels), road rollers, road grading and maintenance equipment, other road-making equipment, gasoline locomotives and tramcars, derricks (except mining), conveyors, coal cutters, mining and quarrying equipment (excluding rock drills, hoists, crushers and smelting machinery), refrigerating equipment (having more than ten tons refrigerating capacity), machinery for oil mills, ball- and roller-bearings and parts, and card punching, sorting and tabulating machines, according to the classification of the United States Department of Commerce. For many other types of machinery the Soviet Union was either third or fourth.

The large shipments in 1929, particularly in the last three months, indicate that the rôle of the Soviet Union as a market for various types of American industrial equipment was even greater than in 1928. Striking evidence of this is the fact that the value of the shipments to the U.S.S.R. by the Amtorg in the calendar year 1929 was double that for 1928, although, due to the lower activity during the first part of the year, the exports in the fiscal year 1928-29 (ending September 30, 1929) were below those of the preceding fiscal year.

Agricultural Equipment

The sharp increase recorded in 1928-29 in the purchases of agricultural equipment in the United States came after a decline in the preceding year and indicates the great importance that the recent developments in centralized farming in the U.S.S.R. may have for the United States. These purchases rose from \$15,199,157 in 1927-28 to \$28,276,752 in 1928-29. The bulk of the purchases in the two years consisted of tractors, which came to more than \$20,000,000 in the latter year and increased 81 per cent.

Orders placed for other agricultural machinery showed an even greater relative gain (274 per cent), while those for binder twine were reduced to about one-third the 1927-28 figure. Live stock purchases were negligible, as

against expenditures of nearly \$300,000 for sheep and horses in 1927-28.

The United States continues to be the principal source of tractors for the Soviet Union, and will account for over three-fourths of the sixty thousand tractors to be used on Soviet farms this spring. The gain in purchases of tractors has been simultaneous with an expanded tractor manufacturing program in the Soviet Union. The United States customs figures for 1928 and the first half of 1929 show that the Soviet Union is third among the markets for American agricultural machinery and implements, being exceeded by only Canada and Argentina.

The figures for 1929 show that the Soviet Union was the largest foreign market for American track-laying tractors and a close second (after Canada) for wheel tractors.

The rapid rate at which the purchases of American agricultural machinery for the Soviet Union are developing is indicated by the fact that in the period of a little over a half-year, beginning with the summer of 1929, the Amtorg Trading Corporation purchased over 20,000 tractors in this country for shipment to the U.S.S.R. These tractors aggregated \$30,000,000 in value and will arrive in time for the spring sowing campaign. In addition, 17,000 plows, 2,000 grain drills for seeding machines and 18,000 special drills for cotton and corn were purchased. The companies which received this business are the following: International Harvester Company, John Deere Company, Caterpillar Company, Allis-Chalmers Company, Case Tractor Company, Massey-Harris Company and the Cleveland Tractor Company. Plows were purchased also from the Oliver Farm Equipment Company and B. F. Avery & Sons.

The purchases of automotive equipment in the United States by the Soviet Union have been increasing steadily, amounting to \$5,275,124 in 1928-29, as compared with \$2,802,295 in 1927-28. Exports to the Soviet Union of aircraft parts in 1929, according to United States customs statistics, amounted to \$857,033, Soviet Russia in Europe being the leading market.

Soviet Exports to United States

A study of the imports of Soviet products to this country presents considerable difficulties, due to the fact (mentioned above) that some products of Soviet origin are received by way of Germany and other European countries and, therefore, do not appear on customs reports either as Soviet exports to the United States or as imports from the Soviet Union. For instance, while direct deliveries of Soviet furs to customers in the United States amounted in 1928-29 to \$8,299,215—an increase of nearly 16 per cent over the preceding year, some experts estimate that more than half the total fur exports from the U.S.S.R., valued at \$56,000,000 in 1929, find their way eventually to this country. In view of this even the \$40,000,000 estimate of direct sales of Soviet products in the United States may be regarded as a very conservative figure. The actual deliveries of Soviet products reported in 1928-29 totaled \$30,749,044, as against \$22,306,529 in 1927-28—an increase of nearly 38 per cent. This is the most notable gain shown in recent years, and was accounted for, in great measure, by an 85-per cent gain for mined products, mainly manganese, the latter constituting more than one-fifth of the total deliveries.

The principal item of Soviet exports to the United States in 1929, as in the preceding years, was furs, which made up 27 per cent of the deliveries in 1928-29. Precious metals (platinum, iridium, etc.) made up 11.8 per cent, casings 8.7 per cent, fish products (including caviar) 6.1 per cent, coal 4.9 per cent, lumber 4.6 per cent, bristles 2.9 per cent, flax, hemp and tow 2.7 per cent, and crude drugs 2.5 per cent. (For details of purchases and sales, see tables XV and XVI, pp. 133-134.)

It will be observed that manufactured products occupy an insignificant rôle among Soviet exports to this country, in spite of the fact that they constitute a substantial portion of the exports to other countries. The bulk of the Soviet sales in the United States consists of agricultural or mineral products, of many of which the Soviet Union is one of the

world's leading producers. These include manganese, platinum, crude drugs (particularly licorice root), mushrooms, casings, bristles, caviar, and flax.

Soviet Purchases by States

The business of the Amtorg and the other Soviet-American trading companies extends to practically every section of the United States. These organizations have placed orders for shipment to the Soviet Union in the past few years in practically every state and in Canada. The largest amount of orders (\$120,000,000) went to Texas for cotton. Other southern states, including Alabama, Louisiana and Tennessee, also came in for a goodly portion of the cotton business. Purchases of industrial equipment are made largely in the eastern and middle western states, the leader being New York, with total orders of about \$60,000,000—Illinois, Pennsylvania, Ohio, Michigan, Massachusetts, Indiana, Missouri, New Jersey, Wisconsin and Connecticut follow in the order named. Business with the western states has increased to a substantial sum during the past few years, California with about \$10,000,000 worth of purchases being the leader.

A few characteristic items culled from the recent American press give an indication of the wide radius embraced by purchases in this country for the Soviet Union and the substantial effect which these orders have on certain American industries. A writer in the *Cleveland Plain Dealer* of January 2, 1930 stated that the large orders of machine tools for Soviet automobile and tractor factories placed with Cleveland firms in 1929 "resulted in a stabilizing of industry here when demands from the automotive field were at a low ebb. . . . Had it not been for these Russian orders, many Cleveland factories would have faced a shut-down when automobile orders temporarily stopped."

The *Boston Herald* recently contained an item to the effect that "employment for several hundred additional men will be furnished . . . in filling a contract . . . to recondition thirteen steamers recently acquired by the Soviet

government through the Amtorg Trading Company from the United States Shipping Board."

The Stockton, California, *Independent* of December 21, 1929 carried an item which read: "Made in California and consigned through the port of Oakland as the largest shipment of farm machinery ever exported from this district, 100 carloads of combine harvesters were being stored aboard a vessel here to-day, destined for Soviet Russia....

"Throughout the summer the Stockton plant of the Caterpillar Tractor Company has been working at full capacity to meet contract requirements laid down in the Soviet sales agreement."...

The Columbus, Georgia, *Ledger* of January 19, 1930 stated that "A Columbus factory...has been running day and night since early in December on export business. The company is handling an order (for equipment for Fordsons) for the buying agents of Soviet Russia....It will aggregate eleven carloads and without doubt is the largest order of its kind ever received by any company in this country."...

From Schenectady came the announcement recently that "the General Electric Company is at work on the manufacture of the four largest hydro-electric generators in the world, to be installed in the Dnieper River power plant. Each of these generators is rated at about 100,000 horsepower."

The New York *Evening Post* of February 15, 1930 carried a dispatch from Chicago which stated, in part: "More bright spots are visible in the business situation, particularly in the industrial line. A good-sized order for tractors, agricultural implements and tools from the Russian Government is being filled. Orders from other countries also are being forwarded."

A writer of the New York *Evening World* of the same date points out that Staten Island, where the piers of the American Export Lines are located, has become "one of the busiest shipping centers in this country. . . . Railroads bring the goods from all over the United States to Staten

Island for shipment to Russia. . . . 17 ships are on this run. . . .”

The *Wall Street Journal* of February 20, 1930 quoted an article in the *Iron Age* reviewing the situation in the machine tool industry. This quotation read, in part: “In export trade, the outstanding purchases are for shipment to Russia. The Amtorg Trading Corporation . . . has recently sent out inquiries for fairly large quantities of machines.”

The Fairmont, Minnesota, *Sentinel* of January 30, 1930 stated that “An order for \$3,500,000 worth of tractors, to be used on the huge farms of the Russian Soviet Republics in the Black Sea region, has just been received by the Allis-Chalmers Manufacturing Company of Milwaukee. . . . This order, one of the largest ever placed in the United States by foreign purchasers of tractors . . . was placed by the Amtorg Trading Corporation. . . . About forty days of continuous production in the Allis-Chalmers tractor plants is represented by this one order.”

The Rochester, New York, *Democrat Chronicle* of February 19, 1930 contained an item to the effect that “The Foster-Wheeler Corporation is engaged in making one of the largest shipments in its history in fulfilling a contract to construct an oil refinery for the Russian government. . . . Of from 100 to 125 carloads, 55 contain oil stills and parts of oil towers constructed at the local plant.” (The remaining shipments are to be made later.)

Many other similar examples could be adduced, but these are sufficient to show the considerable importance which purchases for the Soviet Union are already beginning to assume for certain American industries. In this connection, it is interesting to note that machinery exports constituted 12 per cent of the total American exports in 1929. Therefore, the Soviet Union, as one of the principal American machinery markets, must be considered as a far from negligible factor in American foreign trade. This fact receives added significance when it is pointed out that while American machinery exports increased 24 per cent in 1929 over the preceding year, purchases of industrial and electrical

equipment for the Soviet Union showed a gain of 180 per cent.

American Technical Assistance to Soviet Union

The year 1928-29 witnessed a notable development of a new and important form of economic relations between the two countries, namely, technical assistance contracts concluded by Soviet organizations with American firms. The first of the contracts were those with Hugh L. Cooper & Company for consulting services on the construction of the Dnieper River power plant; with Stuart, James & Cook for technical assistance to the Donugol Coal Trust; and with the Freyn Engineering Company for engineering assistance in the iron and steel industry.

Over a score of American technical assistance contracts were signed in 1929, the total by the end of the year approaching two score. Among the firms with whom such agreements were made recently are the following: Ford Motor Company, International General Electric Company, Du Pont de Nemours and Company, Radio Corporation of America, Sperry Gyroscope Company, Nitrogen Engineering Company, Seiberling Rubber Company, and Hercules Motor Company. (For detailed list, see Appendix 4, p. 138.)

Another recent new development is the engaging of individual engineers and foremen for employment in the Soviet Union. The total number of American engineers and technicians at present working in the U.S.S.R., either with firms having contracts or as individuals, is about 400.

The technical assistance agreements, besides introducing American industrial technique into the country, have the effect of focusing the attention of the Soviet engineer and executive to a greater extent than before on American equipment. Heretofore, Germany has been the principal foreign adviser to Soviet industries and still supplies the bulk of imported equipment. The contracts sometimes provide for the training of Soviet technicians and workers in American plants, thus making the technical coöperation between the two countries doubly strong.

Question of Credits

The United States has formidable competitors for Soviet markets in Germany and England, particularly as regards industrial equipment, not only because these countries are closer to the Soviet Union geographically, but also because they have gained a better understanding of the Soviet market and exhibit greater flexibility in adapting their methods to its special requirements, due to their long experience in dealing with Russia. Moreover, European equipment is, on the whole, cheaper than American. The advantage of the United States lies in its preëminent ability to produce the type of large-scale, mass production machinery especially suited to the needs of the Soviet Union with its program of rapid industrial expansion.

The question of foreign credits and investments is of great importance for the Soviet Union, in connection with its intensive industrialization program. It must be noted in this regard that the economic upbuilding of the country since the revolution has been effected without the aid of any foreign loans. The total capital invested in foreign concessions does not exceed one-half of one per cent of the basic capital of industry. The further acceleration of the industrial development of the country can be aided by an increased participation of foreign capital in the financing of Soviet purchases abroad and by foreign investments in the Soviet Union, either in the form of concessions or of loans. The further prospects of Soviet-American trade are closely bound up with this question.

Germany and other European countries have extended to the Soviet Union substantial government-guaranteed credits. Certain improvements in the financing of Soviet purchases in the United States may also be noted. Not only has the number of American firms granting credits to Soviet purchasing organizations increased, but the terms have become more favorable. Credits of three years or over were received by the Amtorg Trading Corporation from a number of leading firms during 1929. Credits for one year or more were extended by nearly 200 companies.

Visits of Business Delegations

An important influence on Soviet-American economic relations was exercised by the visits of many Soviet engineers and executives to the United States and of American business men to the Soviet Union. During 1928-29, 133 special Soviet delegations comprising 421 members and representing practically every important industry visited this country to study American economic developments, to place orders and to conduct negotiations for technical assistance. In 1930 Soviet organizations plan to send many more representatives to the United States. In the month of January 1930 there were about 500 Soviet engineers and business representatives temporarily in this country. In 1927-28 there were only 75 delegations with 200 members.

In 1929 about 800 American business men and engineers left for the Soviet Union, some to study market conditions in that country and some for permanent employment. Not counting the American Businessmen's Delegation of nearly 100 persons, which was organized by the American-Russian Chamber of Commerce, the U.S.S.R. was visited last year by representatives of over 150 American firms, including many leaders in their fields. Among these were the following: the Ford Motor Company, the General Motors Corporation, the Studebaker Motor Company, the Willys-Knight Company, the Nash Corporation, the Standard Oil of New York, the Texas Oil Company, the Bucyrus-Erie Company, the Sullivan Machinery Company, the Foster Wheeler Corporation, the Caterpillar Tractor Company, the Cleveland Tractor Company, the International Harvester Company, the Allis-Chalmers Manufacturing Company, Dwight P. Robinson & Company, the Marion Steam Shovel Company, the Austin Company, the International General Electric Company, etc. Representatives of some banks, including the National City Bank, the Chase National Bank, the Equitable Trust Company, the U. S. National Bank and others, also visited the Soviet Union.

CHAPTER V

THE SECOND YEAR AND THE FURTHER PERSPECTIVES

THE results of the first year of the Five-Year Plan furnish a concrete basis for an examination of the program for the second year and for judging the prospects for the remaining years of the period. In general, most branches of Soviet economy exceeded the programs laid out for them in 1928-29, thus justifying an upward revision of the schedules for the second year.

As was shown in Chapter I, the national income in 1928-29 showed an increase of 12.4 per cent over the preceding year, as against the scheduled gain of 10.7 per cent; large-scale industry exceeded the production program by nearly 2 per cent and freight operations of railroads by 10 per cent. The control figures for 1929-30, ratified on December 8, 1929, provide for the unprecedented rate of increase of 32.1 per cent in the production of enterprises under the supervision of the Supreme Economic Council, instead of the original Five-Year Plan schedule of 21.5 per cent. Capital investments in industry for the year are scheduled at nearly 3,700,000,000 rubles, or about 50 per cent more than was originally planned for the second year of the five-year period. A reduction in production costs of 11.5 per cent is scheduled, as compared with the original plan of 7.5 per cent, and a 9 per cent gain in the average industrial wages, as against the original program of 7 per cent.

The upward revision of the plans for the year affects practically every industry. The production of coal is set at 51,600,000 tons, as against 46,600,000 tons originally, and pig iron production at 5,500,000 tons, as compared with the former schedule of 5,000,000 tons. The output of tractors

is to be 10,800 units, as against the original plan of 4,130.

With regard to agricultural production, the estimates of the value of the 1929 crop are smaller than the original schedules of the Five-Year Plan, the respective totals being 15,186,000,000 and 16,303,000,000 rubles (both according to prices of 1926-27). The lowering of the estimate is due partly to the destruction of a considerable part of the winter crop in the Ukraine, the North Caucasus and the Urals in the spring of 1929, to the failure of the number of live stock to increase on account of the poor crop of 1928, and to the reduction in the yield per acre of some industrial crops, including sugar beets and cotton, due to plant pests.

For 1930, however, the total sown area is planned at 130,400,000 hectares (322,088,000 acres)—10,000,000 hectares more than in 1929 and slightly more than the original program. In setting this program, the Soviet authorities base their high expectations largely on the development of state and collective farms. The collectives alone, according to the decisions made in January, 1930, are to cover an area of over 30,000,000 hectares (75,000,000 acres)* in the spring of 1930, exceeding by a wide margin the figure originally planned for the final year in the Five-Year Plan. In addition, they are expected to cultivate about 10,000,000 hectares of fallow land. State farms will cultivate about 3,300,000 hectares.

The large gain planned for industrial production, in spite of the deficiency expected in the supply of agricultural raw materials of the crop of 1929, is explained by the fact that the largest increase (45 per cent) is scheduled for heavy industries, which consume practically no agricultural raw materials. In 1928-29 this group showed a gain of 26 per cent and in 1927-28, 22 per cent. For light industries, the increase in production for 1929-30 is scheduled at 22 per cent, as compared with 18 per cent in the original plan.

An indication of the financial developments connected

* The revised estimates for collective farming are greatly in excess of the control figures for 1929-30. This explains the discrepancy between the above figures and those of table III, p. 106, which are based on control figures.

with the upward revision of the program is afforded by the fact that the federal budget for 1929-30 is set, according to the recent decision of the Central Executive Committee, at 11,621,100,000 rubles (\$5,984,800,000), as compared with the budget schedule in the Five-Year Plan of 9,178,000,000 rubles. It is estimated that the national income will show an increase of 20 per cent, while according to the Plan, the national income was to increase only 15.8 per cent in 1930.

Factors Making for High Rate of Expansion

It may be of interest here to examine briefly the factors which have made for a high rate of expansion in the past few years, and which are expected to make possible a still higher tempo in the coming years.

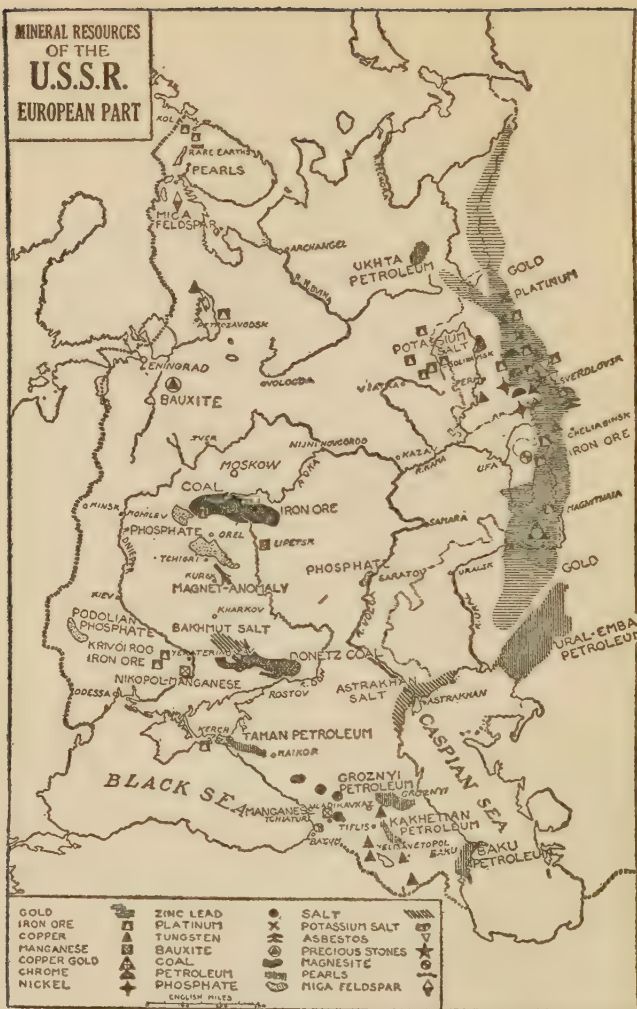
In the first place, the natural resources of the U.S.S.R. are probably second to those of no other country, in extent and variety. Col. Hugh L. Cooper, the well-known American engineer, in one of his speeches stated: "... Russia has within its borders over 70 per cent of all the natural resources in Europe.... Prosperity all over the world is founded only upon natural resources and their successful development." The country is one of the foremost with respect to resources of lumber, oil, peat, manganese, platinum, asbestos, potash, and phosphates.

The metallurgical industry of the Soviet Union can be developed on the basis of iron ore resources of nearly 3 billion tons (not counting the Kursk magnetic anomaly, tentatively estimated as high as 25 billion metric tons), and coal resources estimated at 552 billion metric tons. There are also large workable deposits of non-ferrous metal ores, including copper, lead, zinc, etc.

The basis for a great development of automobile and tractor utilization is provided by the Soviet oil reserves, estimated at nearly 5 billion tons and made up of some of the world's greatest deposits, such as those of Baku and Grozny. The peat bogs of the U.S.S.R., containing about three-fourths of the world's peat resources, are also an important source of fuel.

The forest reserves of the country are estimated at close

**MINERAL RESOURCES
OF THE
U.S.S.R.
EUROPEAN PART**





to 2 billion acres, constituting by far the greatest resources of any country. In spite of a heavy annual cut, this amounts to only a small part of the yearly increment.

Agriculture in the Soviet Union has at its disposal the world's largest continuous area suitable for cultivation. According to the Five-Year Plan there will be a total increase in the area under cultivation by 1933 of 22 per cent over 1927-28, including great stretches of virgin lands in Kazakstan and other regions. A considerably greater expansion of the area under cultivation is quite feasible.

The average yield of wheat and rye in the U.S.S.R. at the present time is less than one-half of what it is in the rest of Europe and substantially below that of the United States. The raising of the yield per acre one-third (as provided in the Five-Year Plan) would be equivalent to an expansion of the area under cultivation of 110,000,000 acres, an area equal to the total arable land of Germany and France together.

The enormous resources of fertilizer minerals in the Soviet Union assure the required raw materials base for providing agriculture with fertilizers to increase its yield. The potash deposits of Solikamsk in the Urals, which were discovered only in 1925, are estimated at over 2 billion tons and constitute the world's greatest resources of this mineral. It was only in 1929 that attention was focused upon the phosphate (apatite) deposits of the Kola Peninsula near the Arctic Circle, which are also believed to be among the greatest known.

Other natural resources of the U.S.S.R. are water power (the undeveloped horse-power being estimated at about 63 million), gold, silver, mercury, tungsten and chromium ores, pyrites, graphite, sulphur, asphalt, mica, nickel, antimony, bismuth, arsenic, bauxite, and salt. Among the important non-mineral resources are fish and furs, which are important items on the Soviet export list.

In pre-war Russia, exploration operations for mineral resources were extremely backward and covered only a small part of the country. During recent years, the work of the Soviet Geological Survey has been greatly intensified

by the government and many important discoveries have been reported. The allotment for the State Geological Survey amounted to \$4,000,000 in 1928, as against \$100,000 in 1913, and for 1930 the Supreme Economic Council has appropriated \$20,000,000 for this purpose. Over 500 geological parties were sent out to all parts of the country in 1929.

The U.S.S.R., without any barriers to industry or trade, has a continuous area two and one-half times that of the United States and more than four times that of Europe, excluding the U.S.S.R., which has a score or more of trade barriers. It has a large and vigorous working population among which health conditions have been greatly improved, as compared with those existing before the war. While the Soviet Union is still backward in regard to literacy, tremendous strides have been made in the past five or six years in educating the masses. Illiteracy now amounts to less than 46 per cent, as compared with 77 per cent in 1897, the time of the last pre-war all-Russian census, and 50 per cent in 1926. The Five-Year Plan provides for a total liquidation of illiteracy among industrial workers by the end of the period, and a reduction to 18 per cent among the general population (eight years of age or over).

An important factor in industrial progress in the Soviet Union is the close degree of coördination prevailing between the administration and the working force. The workers in industrial enterprises participate actively in the work of increasing labor productivity and reducing costs. One of the means through which this is accomplished is production councils, which exist in practically every factory, mill and mine. The "socialist competitions" and workers' "shock brigades" are also not unimportant forces in raising the morale of the workers and stimulating more and better production.

The Soviet workers and trade unions display a real understanding of the need for the mechanization of industry and actively support it. One of the reasons for this attitude is that the rapid tempo of industrial expansion has not been accompanied by increased unemployment but

has, on the contrary, resulted in a continuous gain in the number of workers employed in industry. In addition, wages are increasing steadily and are now much higher than before the war, aside from the many social insurance and other benefits now received by workers, which were totally absent in pre-war Russia. These include sickness, unemployment and old-age benefits, vacations with pay and many educational and recreational facilities never before enjoyed by Russian workers. The seven-hour day is being rapidly introduced into industry and will be in effect in all large enterprises by 1932-33. Strikes are not prohibited, but are practically non-existent.

The development of research in the Soviet Union has not only kept pace with, but even outstripped the growth of industry. The allotment for industrial research and exploration for 1930 is 219 million rubles, as against 65 million rubles in the preceding year. Industrial research is, to a great extent, coördinated under the direction of the Scientific Technical Administration of the Supreme Economic Council and duplication of effort is thereby avoided.

The introduction of the continuous labor week and of the three-shift system will mean increased utilization of existing equipment, greater production and reduced costs (through lowering of overhead, fuel economy, etc.), increased employment and promotion of more workers to higher positions. Under the continuous labor week, which will be in effect in two-thirds of all enterprises by the end of 1929-30, factories and offices will operate all year round, with the exception of five legal holidays, while the workers will continue to receive their legal number of days off per year. In this connection, it has been considered necessary to introduce a new calendar, consisting of seventy-two weeks of five days each, plus the five legal extra-calendar holidays. Each worker is occupied four days each week and has the fifth day off, the rest days being arranged on a stagger system. It is expected that this system will involve less strain on the working staff and will result in increasing both individual productivity and the quality of the product. The results already obtained in the plants

which introduced the continuous workweek in 1929 justify the high expectations in this respect.

An important factor in the economic progress of the country is the control and planning of industry and other branches of economy in a coördinated and centralized manner by means of unified state organizations. Through this planning the attempt is made to adapt production to demand and to coördinate the operations of the various branches of national economy. The unified control of industry makes possible the widest distribution of the available knowledge in regard to improved methods of industrial technique and new scientific achievements, since these are common property and equally available to all enterprises. Moreover, the concentration of planning and research for new industrial projects in large government-owned organizations effects a considerable economy over the method of planning by individual enterprises and permits a high degree of standardization. Among such organizations formed in recent years are the Gipromez (State Institute for Designing Metal Works), with which the Freyn Engineering Company and a number of European concerns are working; the Giproschacht (State Institute for Designing Coal Mines), which has, among others, a contract with the Allen and Garcia Company; the Orgametal (Bureau for Rationalization of Metal Plants), which has a permanent demonstration station for machinery exhibits; the Khimstroy (Chemical Plant Construction Bureau), etc. Recently a new designing bureau was organized to handle general industrial construction. This bureau will comprise about 4,500 architectural and engineering designers, a number of whom will be engaged abroad. The American architectural firm, Albert Kahn, Inc., will be among the consultants to this bureau.

While the control of industry is centralized, wide scope is given to the exercise of individual initiative on the part of executives, engineers and workers in the operation of industrial enterprises. The tendency is to give the administrations of individual plants belonging to a trust increased authority.

The process of centralization, which has taken place in the past few years, involving the shutting down of smaller and less efficient plants and concentrating production in larger plants, results in increased production. For instance, instead of 900 factories and shops producing agricultural machinery before the war, there are 44 at the present time, while the output is three times that of 1913. The number of shoe factories was reduced from 44 in 1926-27 to 39 in 1927-28, while the output was 54 per cent greater. The number of blast furnaces was reduced from 140 in 1913 to 70 in 1929, while the average output per furnace doubled. In 1929, the output per blast furnace increased 6.7 per cent, per rolling mill 10.6 per cent, per saw-mill frame 21.6 per cent and per coking oven 7.3 per cent over the preceding year.

The increasing well-being of the population, both workers and peasants, since the revolution has created a rapidly growing demand for industrial products and for the higher grades of foodstuffs. The 128 million peasants, especially, are buying large quantities of goods which were hardly ever sold in the villages in the pre-war days and this has opened up a great new market for many products and made necessary the establishment of new industries. It has at the same time resulted in a shortage of some commodities, in spite of the fact that they are now produced in much larger quantities than before the war, when the supply exceeded the demand.

The virtual elimination of luxury industries has permitted the application of all the available resources of the country to the development of the industries producing necessities. Before the war, a large part of the profits accruing to the owners of industry and the wealthy land-owners was expended abroad for luxuries. At the present time, all the profits of industry go for new construction and improvements or for bettering the condition of the working force. In addition, through sacrifice and thrift, the population is making available large amounts of capital for industrial expansion, by means of subscriptions to internal state loans and savings deposits.

Financial Program

A concrete understanding of the way in which the Soviet Union plans to finance its huge expansion program is afforded by a study of the so-called unified financial plan for 1929-30, which attempts to present a picture of the financing of the entire socialized sector of the national economy. This financing will be accomplished with practically no foreign investments, such as have played a large part in the rehabilitation of many European countries.

The unified financial plan estimates the total amount of capital required by state and coöperative economy during the fiscal year. It covers the financing of government administration, national defense, industry, transportation, communications, the socialized portion of agriculture (state and collective farming), trade, and other branches of national economy.

The direct sources from which the required financial means come are the federal and local budgets, the banking system, the social insurance allotments, the funds of the State Insurance Company, of industrial and trading enterprises and of coöperatives and trade unions. The total amount of these funds which will be made available in 1929-30, according to the estimate of the Commissariat for Finance, is (omitting all duplications) 18.2 billion rubles (over 9 billion dollars)*—an increase of 49 per cent, as compared with the total for 1928-29 of 12.2 billion rubles. This gain is greater than that expected in the national income, which is accounted for by the fact that in 1929-30 the financial plan will take in a larger proportion of the national income, due to the greater rôle played by the socialized sector in the economic life of the country. This also means that a greater part of the national income will be employed in the further development of the country than in previous years. The national income of the U.S.S.R. in 1929-30 is estimated at some four billion rubles larger

* This and the figures that follow are taken from the preliminary draft of the financial plan, subject to correction and ratification by the Soviet government.

than in 1928-29, while the financial plan involves investment of six billion rubles more. The financial plan will absorb 53 per cent of the national income in 1929-30, as compared with 41 per cent in 1928-29.

The federal budget for 1929-30 (omitting duplications, such as funds to be transferred to local budgets and borrowings from savings banks, insurance organizations, etc.) will provide 9,475 million rubles, or 52 per cent of the total amount of financing. Local budgets will provide 1,343 million rubles (7.4 per cent) while financing by the banking system (commercial and savings), from its own resources, not including allotments from the state budget, will provide 1,894 million rubles, 10.4 per cent of the total. Appropriations made by industries for the social insurance fund and the funds of the State Insurance Company will provide another 7.6 per cent of the required total.

Economic organizations (industrial and trading enterprises, etc.), after turning over a large part of their profits to state and local budgets, to banks for long-term deposit, to the social insurance fund, etc., will have available for financing about 1,739 million rubles, providing 9.6 per cent of the total funds. Coöperatives, trade unions and other sources are expected to supply 13 per cent.* (See table VII, p. 111.)

In comparison with the preceding year, all sources of financing are to show substantial gains. A particularly great improvement is expected in the financial position of the federal budget and of economic organizations and co-operatives. On the other hand, the rôle of local budgets, the banking system and social insurance and trade union funds will be somewhat smaller.

Another estimate has been made of the amount of financing by the ultimate sources from which the funds are derived, rather than by the mediums through which they are distributed, such as the budget, etc. This estimate shows that more than a third (36.6 per cent) of the total financing

* It should be understood that a large part of the financing by the budgets, banks, insurance companies, etc., is derived originally from the profits of industrial and other business organizations.

in 1929-30 is to come from profits of enterprises, 31.2 per cent from taxes, 14.2 per cent from attracted funds (borrowings, etc.), 9 per cent from insurance funds, and only 2.3 per cent from the increase in currency circulation. In 1928-29 taxes constituted the most important single source of financing.

The profits of economic organizations, which in 1928-29 amounted to 3,797 million rubles (\$1,975,000,000), are expected to increase to 6,663 million rubles (\$3,431,000,000) in 1929-30. This gain of 75 per cent is greater than that in the total amount of financing, economic organizations themselves playing a greater rôle in financing than in preceding years. A large increase in the earning power of producing organizations is one of the principal elements of the financial plan for the five-year period. As stated before, it is connected with the program for a drastic reduction of costs and for a smaller decrease in the prices of industrial commodities. The difference between the reduction in costs and prices is to provide the additional profits.

While total taxes are planned to increase from 4,206 to 5,668 million rubles (\$2,919,000,000), a gain of 34.7 per cent, their rôle in the total financing will decline somewhat. The principal taxes are the income tax in urban communities and the single agricultural tax in rural communities, the business turnover tax, excises, customs, duties and stamp taxes.

Internal loans, the banking system, etc., are expected to increase financing from 1,626 to 2,590 million rubles and the funds of the insurance and social organizations from 1,360 to 1,657 million rubles. Part of these latter funds go for long-term industrial financing, but the greater part is expended for social and cultural needs, which are also a part of the financial plan. The net increase in currency circulation, according to the unified financial plan, will amount to 425 million rubles in 1929-30.

Over 60 per cent of the amount of capital provided for in the financial plan is to be expended on the financing of the national economy. The financing of industry, agriculture, transportation, etc., is to absorb 11.12 billion rubles

(\$5,726,000,000) in 1929-30 as compared with 6.65 billion rubles (\$3,423,000,000) in the previous year. This increase of 84 per cent is a figure which probably is not duplicated in any other country. In 1928-29 the national economy absorbed 54.5 per cent of the total expenditures under the financial plan.

Of the total financing in 1929-30 only 1.86 billion rubles, or 10.2 per cent of the total, is to be used for the purposes of administration and national defense (as against 13.4 per cent in 1928-29). Nine-tenths of the revenues provided for by the financial plan are to be used for productive purposes, including, besides the financing of the national economy, social, cultural and other requirements. Industry is scheduled to absorb the largest part, its share increasing from 2.56 to 4.06 billion rubles. The financing of agriculture by the state and local budgets, the banks, etc., will increase from 937 million rubles in 1928-29 to 1.58 billion rubles in 1929-30. In addition, the financing of collective farms from the resources of the population itself (not in the financial plan) is expected to go from 450 million rubles in 1928-29 to 1,095 million rubles in 1929-30. Thus the total financing of socialized agriculture for 1929-30 will amount to 2,675 million rubles (\$1,379,000,000), practically double that of the preceding year. The financing of social and cultural activities is expected to increase from 3,035 to 4,152 million rubles (\$2,138,000,000) in 1929-30.

While the estimates for financing for the year are record-breaking in all respects, the per capita taxation will amount to only \$18 as against \$14 in 1928-29. This figure compares with the annual per capita taxation of about \$75 in the United States.

Agricultural Machine-Building Industry

One of the principal features of the program for 1929-30 and the succeeding years is the rapid development provided for the agricultural machinery industry, which is to undergo the greatest expansion of any major industry.

In 1929 it was estimated that there was only two dollars worth of agricultural machinery and implements per acre of cultivated land in the Soviet Union, as compared with about four times that figure in the United States. It is planned to increase the total production of the industry, figured at 1926-27 prices, to 371 million rubles (\$191,065,000) in 1929-30, as compared with the original program of 262 million, and the actual production for 1928-29 of 212 million rubles.

Particularly important developments are scheduled in the production of tractors. The development of state and collective farming at a tempo far in excess of that provided in the Five-Year Plan has brought about a demand for tractors that can be satisfied only by a great expansion of the industry together with recourse to imports. The first tractors of Soviet manufacture were produced some five years ago. The production in 1928-29 was 3,229 units, comprising the output of small (ten horse-power) tractors of the Krasny Putilov plant in Leningrad, and of heavier tractors in the Kharkov plant. The program for the following year is to be attained largely through enlarging the capacity of the Putilov plant to 10,000 units. The original schedule of 4,130 units will be exceeded two and one-half times.

Three new tractor plants will be under construction in 1930 (aside from the expansion of the Putilov plant), two with an annual capacity of 50,000 machines each and one to manufacture 40,000 tractors per year. The first of these, the Stalingrad tractor works, was started in 1929 and is expected to start production late in 1930. The other two plants, to manufacture heavier tractors, will be located at Cheliabinsk, in the Urals, and at Kharkov, in the Ukraine.

The Stalingrad plant serves as an illustration of the rapid change that has recently taken place in the conception of the scope of future industrial developments in the U.S.S.R. When its construction was planned, it was figured that the plant would have a capacity of 10,000 tractors and that it would take from four to five years to build. After the construction was started a new estimate of the country's needs

for tractors was made, based on the rapid development of state and collective farms, and a closer connection with American engineering practice revealed that the tempo of construction could be materially increased. In consequence, the capacity of the plant was first increased to 20,000, later to 40,000 and, finally, to 50,000 tractors. Also, instead of being completed some time in 1932, the Stalingrad plant is now scheduled to produce 25,000 15 h.p. tractors in 1930-31 and to reach full capacity in the following year.

The original Five-Year Plan provided for an output of 91,000 tractors totaling 1,400,000 h.p. during the five-year period ending 1932-33. This program has been rejected in favor of a far more ambitious program, calling for the production in 1932-33 of tractors totaling 5,225,000 h.p., with the three major plants in operation and the capacity of the Putilov plant increased to 20,000 units. The total production for the five-year period, according to the revised plans, will be 378,000 tractors with a capacity of 9,458,000 h.p., or more than six times the original program. As was shown in the chapter on Soviet-American trade, American equipment and engineering technique is playing an important part in the building up of this industry.

The developments in the production of other agricultural machinery will also be significant. At Rostov-on-Don, not far from Stalingrad, an agricultural machinery plant is being completed which will probably be the largest in Europe, the annual output being estimated at \$60,000,000. The Rostov works produced some farm wagons in 1929 and is expected to begin operations in a number of additional departments in 1930. A further expansion of the plant is now contemplated.

Other important agricultural machinery plants to be under way this year include a large plant in Siberia, a factory for the production of cotton cultivating machinery, and two plants for the production of combine-harvesters. According to present plans, the latter will be constructed at Rostov and Novosibirsk, in Siberia, and will reach an aggregate output of 40,000 units per annum by 1933. A smaller plant,

the Kommunar, is expected to produce several hundred combines in 1930.

The total value of the annual output of agricultural machinery, in consequence of the enlarged programs, is expected to reach a total of over one billion rubles by 1932-33, as compared with the original program of 610,000,000 rubles. Of this total, about three-fourths will be accounted for by tractors and other power machinery, as well as spare parts and supplies for them.

Allotments for the construction and expansion of tractor plants in 1929-30 have been set by the Central Executive Committee at 155,700,000 rubles. For capital investments in the construction of new agricultural machinery plants and improvements in existing plants, a total of 101,200,000 rubles has been allotted.

Automobile Industry

The automobile industry will have the task of keeping pace both with the general industrial expansion and with the development of large-scale mechanized farming. In 1928-29, the Soviet Union produced only 1,900 automobiles, some assembled from imported parts. In 1929-30, the plans call for the production of 14,900 automobiles, including assembling of foreign cars—a nearly eightfold increase. This production will add about 70 per cent to the total number of cars in the country.

There are now three important automobile factories under construction the combined production of which, in 1933, will be many times the present number of automobiles in the U.S.S.R. The principal plant is the Nizhni Novgorod automobile factory, which is to produce 140,000 Ford A and AA model cars annually. The Ford Motor Company is rendering technical assistance to the Avtostroy (Soviet Automobile Construction Company) and more than two score Soviet engineers are now at work at Dearborn, Michigan. The contract for the construction of the buildings for the Nizhni Novgorod plant has been awarded to the Austin Company of Cleveland.

The Amo factory in Moscow is to be expanded to a ca-

capacity of 25,000 trucks, and the Yaroslavl plant will produce about 20,000 heavy trucks. In addition, two plants have been completed at Moscow and Nizhni Novgorod to assemble Ford cars. In the manufacture of engines in the Amo plant the technical assistance of the Hercules Motor Company has been obtained. The automobile program now under way is substantially greater than that scheduled in the Five-Year Plan.

Along with these developments should be mentioned the construction at Yaroslavl of a large rubber tire plant of the Soviet Rubber Trust, with the assistance of the Seiberling Rubber Company. This plant will be merely one department of a large combine to include several factories for the production of other rubber products. The Akron Rubber Reclaiming Company is also rendering technical assistance to the Soviet Rubber Trust.

Another important field which will receive a great impetus from the growth of the automotive industry will be road-building. An extensive program has been started which will involve expenditures of over a billion rubles during the period, 35 per cent of which will come from the budget of the People's Commissariat for Transportation and the remainder from local budgets. The C. F. Seabrook Company of New York is now engaged in carrying out a road-building contract in the Moscow district.

Oil Industry

The radical expansion of the tractor and automobile programs has made it necessary also to revise the production program of the oil industry from the original figure of 21,000,000 tons in 1932-33 to 26,000,000 tons. The program for 1928-29 was overfulfilled and the control figures of 1929-30 call for an output of 16,200,000 tons, as compared with 14,800,000 tons in the Five-Year Plan program.

It is now believed that, with the 500,000 tractors and the more than 200,000 passenger cars and trucks which the Soviet Union will have by the end of 1933, even the revised schedule for oil production will be inadequate, especially in view of the growing needs of the export trade.

The question has therefore been raised of increasing the program to 40,000,000 tons by 1933, or nearly double the original figure.

In the building up of the Soviet oil industry from its low state at the time of nationalization, American oil equipment has played a prominent part. The considerable developments planned for the coming years, involving an especially large growth in refining operations by means of cracking, will undoubtedly be of interest to foreign manufacturers.

Chemical Industry

A chemical industry to supply the needs of the reconstructed Soviet agriculture and industry will be built up almost from the bottom. In an earlier chapter it was pointed out that the Soviet Union now uses less than one-tenth as much fertilizer as the United States. In 1927-28, the year before the inauguration of the Five-Year Plan, only 150,000 tons of superphosphates were produced, 350,000 tons of acids and 285,000 tons of alkalis. The 1928-29 production of superphosphates was 213,000 tons, which is still far below domestic needs. In 1929-30, the production is scheduled to reach 475,000 tons, or more than double the output of the preceding year, while it is planned to bring up the output of ground phosphorite from 45,000 tons in 1928-29 to nearly nine times that figure in 1929-30. The output of 100-per cent sulphuric acid is planned for a gain of 56 per cent, and will amount to 425,000 tons. In 1930, the Solikamsk deposits in the Urals, where two shafts are being sunk, will yield the first quantities of potassium salts.

Expanded production of these and other chemicals in the current year will be made possible by the construction of a large number of chemical plants, some of which are already under way. These include a large central chemical combine to cost 60,000,000 rubles, a combine to be built in connection with the Khopersk metallurgical plant, twenty-three phosphates plants and mills, six sulphuric acid plants, seven plants to produce caustic soda, and several score others. Another important development will be the construction of sixteen wood distillation and twelve rosin extracting plants.

A number of plants will be constructed in the vicinity of the Dnieper hydro-electric station, now under construction in the Ukraine, and will consume the cheap and abundant electric power from the station.

The production of the chemical industry proper (excluding rubber, matches and other consumers' chemical products), is scheduled to total 515,000,000 rubles in 1929-30—49.5 per cent more than in the preceding year. Among the heavy industries, only the mining, agricultural machinery, electro-technical, woodworking and building materials industries are planned to show a greater tempo of growth.

The Supreme Economic Council has allotted this year over 300,000,000 rubles for investments in the chemical industry proper. Of this, 247,000,000 rubles will go for the basic chemicals industries, 11,000,000 rubles for the wood distillation industry, 13,000,000 rubles for the aniline dye industry, etc. More than half of the total capital investments will be employed in the construction of new enterprises, most of which were started in 1929.

It may be of interest to mention here that among the American firms and individuals coöperating on the technical side of this program are the Du Pont de Nemours Company, the Nitrogen Engineering Company, the Westvaco Chlorine Products, Inc., and Professor Harry D. Gibbs.

Electrification

The power developments in the coming years will involve the construction of great central stations to supply power both for industrial and municipal needs. When completed, the regional and other important power plants under construction in 1929-30 will have a total capacity of 2,774,200 kilowatts, exceeding the capacity of all stations now in operation. The program of power plant construction for 1929-30 provides for the continuation of work on several score electric stations now under way. The principal ones, aside from the Dnieper plant (with an ultimate capacity of 800,000 horse-power), are the Svir hydro-electric plant, of 80,000 kilowatts, the Kashira, Moscow, Leningrad, Ivanovo-

Voznesensk, Nizhni Novgorod, Cheliabinsk, Shterovka, Bobrikov and other plants, some of which will be of more than 100,000 kilowatts capacity.

The output of regional plants alone is scheduled to attain a total of 3,706,000,000 kilowatt-hours in 1929-30, an increase of 54.4 per cent over 1928-29 and more than five times the 1913 production. During the year a total of 640,000,000 rubles is to be invested in the construction of new power plants, of which 90,000,000 rubles will be expended for industrial power plants by the Supreme Economic Council.

Here, again, the importance of this development to foreign industrial circles may be pointed out. The American companies already prominently involved include the International General Electric Company, the Westinghouse Electric Manufacturing Company and the Newport News Shipbuilding and Dry Dock Company.

General Machine-Building

The program of general machine-building for 1929-30 provides for an output valued at 1,145 million rubles, at wholesale prices of 1926-27. This is 44 per cent more than in 1928-29 and nearly double that of 1927-28. The developments in this industry are especially noteworthy in view of the fact that many of its products were either not produced at all in pre-war Russia or only in insignificant quantities.

For most products the control figures for 1929-30 exceed the schedules of the Five-Year Plan. Thus, the production of large freight cars is scheduled to attain a total of 5,300 units—a gain of 63 per cent over 1928-29 and 1,600 units more than was formerly scheduled. The production of railway locomotives is to increase to 618 units, as compared with the original program of 535 units. The production of internal combustion engines is now scheduled to attain a total of 287,000 horse-power—69 per cent more than in 1928-29 and 79,000 horse-power more than the Five-Year Plan estimate. On the other hand, the output of boilers, planned at 171,000 square meters of heating surface, is to exceed the 1928-29 output by 27 per cent, but will be 5,600

square meters below the schedule of the Plan. The output of steam and hydraulic turbines, while substantially above that of last year, will also be below the original program.

The principal machine-building plants to be built or extended in 1930, aside from the agricultural machine and automobile factories, are the Lugansk locomotive works, a large ball-bearing plant (a commission is now in the United States working on the designs for this plant), a machine tool factory and an instrument plant. Twelve other plants are being designed, the construction of which is to start later.

The total investments in 1929-30 for new construction and improvements in all machine-building industries (including the automotive, agricultural machinery and tractor industries) are scheduled at 521 million rubles, of which over 300 million rubles will go for new construction, divided about equally between work on the continuation of enterprises already started and the starting of new plants.

Metallurgical Industries

For the iron industry the developments planned for the next few years are of truly great scope. The program for 1929-30 calls for an output of 5,500,000 metric tons of pig iron, an increase of 37 per cent over the preceding year and about 30 per cent over 1913. The production of steel is expected to reach 6,100,000 tons, a gain of 29 per cent.

This increase in production is to be accounted for almost exclusively by existing mills, while the construction of a number of new steel mills will be continued. The new construction under way includes the Krivoy Rog, Zaporozhye and Mariupol plants and the rebuilding of the Dzherzhinsky mill, in the Ukraine, the Magnet Mountain plant in the Urals, and the Kuznetz Basin mill in Siberia. Each of these plants is to have an ultimate capacity of 1,000,000 tons or more. In particular, the Magnet Mountain plant and the Dzherzhinsky mill are each scheduled for an ultimate output of 2,500,000 metric tons of iron annually. The Mariupol plant is designed to produce eventually 4,000,000 tons of metal per year. In addition, a dozen other mills

are being built in the South, in the Urals, the Central Black Soil Region and the Far Eastern Region. The capacities of many existing mills, particularly those in the Ukraine, are being enlarged.

At the time the Five-Year Plan was prepared, it was figured that the maximum capacity of each of the new mills to be built would be 650,000 metric tons of pig iron per annum. As the work of designing the mills progressed, it was found necessary and feasible to greatly enlarge the planned capacity. It is now believed possible to exceed the original Five-Year Plan program, calling for an output of 10,000,000 tons of pig iron and 10,841,000 tons of steel ingots in 1932-33, by at least 25 per cent.

The appropriation of the Supreme Economic Council for 1929-30 for the development of the iron and steel industry is 523 million rubles, one-seventh of the total capital investments in Soviet industry. Of this total 28.5 per cent will go for the construction of new enterprises, 33.5 per cent for the expansion and reconstruction of existing plants and the remainder for capital repairs, safety measures, workers' housing and planning and research work.

The progress of the non-ferrous metals industry, which has never been developed to any extent in Russia, is also scheduled to proceed at a high rate. The output of non-ferrous metallurgy for 1929-30 has been set at 266 million rubles—35 per cent more than in the preceding year. The capital investments in the industry in 1929-30 are estimated at 113 million rubles, of which nearly half will go for new construction. The five-year program for this industry has been practically doubled, the revised schedules calling for an output of 150,000 tons of copper and 120,000 tons of zinc in 1932-33.

Building Materials Industries

The building materials industries of the Soviet Union heretofore have not been able to keep up with the program of industrial and housing construction and it will be necessary to increase substantially the production of cement and bricks, as well as of building lumber and iron building sup-

plies (nails, wire, roofing iron, etc.) in order that the general building program may not suffer from the shortage of building materials. According to the control figures, the production of cement is to attain a total of 22 million barrels in 1929-30, as compared with 14.4 million barrels produced in the preceding year and the original program of 19.5 million. A still larger gain is scheduled for the production of bricks, which is to increase to 5.1 billion units, as compared with the original program of 4.2 billion. Capital investments in the building materials industries (cement, bricks, lime, etc.) are scheduled to show a sharp increase and will amount to 276 million rubles in 1929-30, of which 64 per cent will be expended for the construction of new enterprises.

Other Industries

The value of the output of the principal industries under the supervision of the Supreme Economic Council in 1927-28 and 1928-29, and the program for 1929-30, are given in the control figures as follows:

TABLE E.—GROSS OUTPUT OF INDUSTRIES UNDER SUPERVISION OF
THE SUPREME ECONOMIC COUNCIL, 1927-28 TO 1929-30
(in millions of rubles at prices of 1926-27)

	1927-28	1928-29	PROGRAM 1929-30
A. Producers' Goods	4,662.7	6,052.5	8,781.6
1. Fuel	995.0	1,186.5	1,500.3
Oil	493.8	608.2	752.8
Coal	362.8	417.9	527.0
Other	138.4	160.4	220.5
2. Mining *	76.8	113.3	182.6
Ore mining	50.4	73.9	109.3
Other	26.4	39.4	73.3
3. Metal	1,897.8	2,441.4	3,369.5
Iron and steel	686.8	804.7	993.4
Non-ferrous metals	144.0	197.9	266.4
General machine-building..	591.3	792.5	1,144.9
Agricultural machine-build- ing	148.2	211.9	371.0
Other	327.5	434.3	593.8
4. Electro-technical	182.5	271.0	460.4
5. Building materials	291.1	385.4	599.4
6. Lumber and woodworking...	640.9	920.2	1,650.0
7. Chemical industry proper...	259.6	344.3	514.7
8. Miscellaneous	319.0	390.5	504.7

Table E.—*Continued*

B. Consumers' Goods	6,403.8	7,640.7	9,310.5
1. Textile	3,597.1	4,098.0	4,774.0
2. Clothing	301.5	544.6	829.4
3. Leather and shoe	594.4	862.5	1,157.5
4. Porcelain and china	44.2	51.8	63.0
5. Paper	147.1	185.8	220.8
6. Printing	77.8	95.0	111.2
7. Chemical consumers' goods (rubber, matches, etc.)...	388.1	469.4	674.0
8. Food industries	1,229.4	1,303.3	1,426.5
9. Salt	18.3	20.1	25.0
10. Miscellaneous	5.9	10.2	29.1
Grand Total, A and B....	11,066.5	13,693.2	18,092.1

* Includes iron ore mining which in the past was included in the iron and steel industry.

The above figures are based on preliminary reports. In particular, the output of industries is shown to have increased by 23.7 per cent in 1928-29, while the revised figure is 23.4 per cent.

Production in physical volume and capital investments are shown in the appendix. (See tables I, p. 101, and IX, p. 116.)

In order to make possible a greatly increased output in 1929-30, the Supreme Economic Council has assigned for industrial development the sum of 3,664 million rubles. This total is 106 per cent greater than the investment in 1928-29 and nearly 180 per cent in excess of that for 1927-28. Of the total appropriations producers' goods industries are allotted 2,816 million rubles, more than double the figure of 1928-29, while consumers' goods industries will receive 465 million rubles, a gain of 30 per cent. The remainder will be expended for power plant construction, technical schools, construction bureaus, loans for workers' housing, etc.

Of the total investments in industry in 1929-30 42 per cent, or 1,394 million rubles (\$718,000,000), will go for the construction of new enterprises (824 million rubles for construction enterprises already started and the remainder for those to be started during the year). About 10 per cent of the total investments will be used for the construction of housing for workers. Nearly 600,000,000 rubles will

be expended for the expansion and reëquipment of existing enterprises. The expenditures for capital repairs will total 136 million and labor protection measures 76 million rubles. Industrial colleges are to be subsidized to the extent of 33 million rubles, expenditures to insure an adequate supply of raw materials will total 151 million, for planning and designing work—45 million, and for research and explorations—219 million rubles.

The control figures estimate that the value of the entire industrial output of the U.S.S.R. in 1929-30 will reach a total of 28.05 billion rubles (\$14,400,000,000), in prices of 1926-27, as compared with 22.29 billion rubles for 1928-29 and the Five-Year Plan schedule for the year of 25.02 billion rubles.

One of the most important features of the plans for the industrialization of the country in the coming years is the emphasis placed on rationalization, involving increase of productivity and reduction of costs. It is recognized that without considerable progress in this respect the other parts of the program will be seriously jeopardized.

The program for 1929-30 calls for a reduction in industrial costs of $11\frac{1}{2}$ per cent and in construction costs of 14 per cent. This reduction is to be attained through a 25 per cent increase in the productivity of labor, while the average number of workers employed in enterprises of the Supreme Economic Council is expected to advance to 2,430,000, or 150,000 more than was specified in the original schedule. About one million workers will be on the seven-hour day by the end of 1929-30. A greatly increased activity in new housing construction, particularly for the needs of workers, is planned, to total 6,000,000 square meters of floor space during the year.

Rather complete details of the upward revisions in the program for the second year of the Five-Year Plan have been given, as they furnish an indication of what may be expected in the coming years. While as yet, no general revision of the Plan has been undertaken, it seems likely that if the program for 1929-30 is fulfilled and the same tempo of growth is maintained in the following two years,

the Plan will be completed by the end of 1932, or in four years instead of five.

Agriculture

The coming years will witness a veritable revolution in agriculture in the Soviet Union, involving the rapid shifting from the basis of small-scale individual production to large-scale farming by coöperative or state enterprises. The control figures call for a total sown area in the spring of 1930 of 130.4 million hectares (322 million acres). This program, which is well above the pre-war average, is 600,000 hectares over the original Five-Year Plan schedule.

Of the total area to be sown in 1930, grain crops are planned to cover 105.5 million hectares (260.6 million acres) as against the 95.8 million hectares actually harvested in 1929 and the original schedule of 105.3 million hectares. State farms are expected to have 3,280,000 hectares under cultivation of which 2,478,000 hectares will be under grain. The Zernotrest (State Grain Trust) farms alone will sow over one million hectares. For collective farms the control figures called for a total sown area of 15,000,000 hectares. The latest decision of the Government provides for more than doubling this figure in 1930. The number of collective farms and of peasant families in collectives will exceed the original plans even for 1933. It is expected that 10,000,000 families will be included in collectives this spring, but the figure may be exceeded.

At the present time only preliminary results of the winter sowings of 1929, which will make up a part of the area of 1930, are available. The total area sown to winter crops in 1929 is estimated at 38.6 million hectares—an increase of about 3½ per cent over the area sown in the fall of 1928, as compared with the 7 per cent increase called for in the program. The explanation for this failure to meet the program lies in the unfavorable weather conditions and also in the adverse influence exercised by the partial destruction of winter crops in the two preceding years. The area under cultivation has been stable for an even longer period, with the result that the peasants were not

fully prepared for an expanded fall sowing campaign. In the light of these circumstances, the achieved gain in sowings, although not up to the program, may be regarded as quite favorable.

Of importance in this connection was the success of the campaign for contracting crops. In spite of the fact that the program was set at more than double that of the preceding year for grain, and at one and a half times for industrial crops, the contracting of 1929 winter crops exceeded the plan by 36.4 per cent, the contracted area reaching a total of 12,820,000 hectares by December 1, 1929.

For the spring of 1930, the Soviet Government has taken measures to increase the area under cultivation even more than scheduled in the control figures, in order to counterbalance the deficiency in winter sowings. Among the measures outlined are: a very rapid extension of the area sown by state and collective farms; a marked gain in the supply of agricultural machinery, particularly for the socialized farms; a broadening of the system of supplying peasants with seeds, machinery and money as advances on the purchases of crops not yet harvested; the wide introduction of crop rotation; an increase in the quantity of selected seeds and fertilizers supplied, etc.

In its decree of December 30, 1929, the Council of People's Commissars of the U.S.S.R. called for an 11 per cent extension of the total area under cultivation in the spring of 1930. The sown area in the Russian Republic proper is to be increased 9.3 million hectares, in the Ukrainian Republic 1.8 million, and in other republics 800,000 hectares. The goal set is to extend the sowings of spring wheat by 20 per cent, corn by 15 per cent, cotton 40 per cent and sugar beet seeds 35 per cent.

In order to attain this large increase in acreage, the Council of People's Commissars emphasized the necessity of expanding the socialization of farming during the spring sowing campaign to cover one-third of the total spring sowings. Collective and state farms are to account for the greater part of the increase in area under cultivation in

1930, the former being scheduled to extend their sowings at least 25 per cent by using fallow land. The 159 state farm machinery service stations to be organized in the spring of 1930, together with the work animal service stations, will plow at least 3,500,000 hectares of land in 1930. Along with the state service stations, the number of co-operative stations is to be increased to about 100. The improvements in the methods of cultivation are expected to result in an increase in the yield per acre of about 8 per cent in 1930.

The total number of additional tractors to be supplied in 1930 is estimated at the equivalent of more than 54,000 10-h.p. units. In addition 200,000,000 rubles (\$100,000,000) worth of agricultural implements is to be supplied in the spring of 1930 (the total supply for the year 1929-30 is estimated at more than double the figure), 24,000,000 rubles worth of mineral fertilizers and a large quantity of insecticides.

The Commissariat for Trade has been instructed to supply at least 800,000 metric tons of 90 per cent pure strain seeds and 200,000 tons of 80-90 per cent seeds, to be furnished to peasants in exchange for ordinary seeds with certain compensation for the difference in quality. The distribution of these seeds has been proceeding satisfactorily in most regions. At the same time, special seed funds are to be created by peasant communities, to attain a total of 1,000,000 tons in the Russian Republic proper, 350,000 tons in the Ukrainian Republic and smaller quantities in other republics. The regions in which crops failed in the previous year, particularly the Middle Volga Region, the Urals and Siberia, are to be supplied with seeds, which are to be returned to the state only by the end of the year.

The total centralized financing for the 1930 spring sowing campaign is estimated at 814 million rubles, of which 247 million rubles has been advanced by the State Bank on contracted crops, 260 million rubles is to be given by the Commissariat for Finance from the state budget, and 307 million rubles is to be supplied by the agricultural credit system.

Provided the plans for their development are carried out, state and collective farms will produce this year at least half the amount of grain put on the market. They are also expected to increase greatly their live stock and will be more important as suppliers of animal products.

The great irrigation projects under way in Central Asia, Transcaucasia and Kazakstan will increase the total irrigated area of these republics by 445,500 hectares in 1930, of which 332,300 hectares are to be planted to cotton.

An important element in increasing the food supply of the country in 1930 will be the greater fish production. The results of the 1929 fall fish catch in the Caspian Sea justify the expectation that the fish supply will be increased substantially during 1930.

Transportation

The plans for the next few years provide for a large expansion of the transport system to take care of the growing needs of industry and agriculture and of the steadily increasing passenger transportation. The program for 1929-30 provides for a total freight turnover of 127 billion ton-km. as against 106.7 billion ton-km. in the previous year, when the program was greatly exceeded. Reductions in railway operating and construction costs of 14 and 18 per cent, respectively, and a 7-per cent gain in the wages of transport workers are planned for 1930.

The entire transportation system of the country, including waterways and highways, will require capital outlays of 1,840 million rubles (\$978,000,000) in 1929-30, a gain of 52.7 per cent. A large increase in the highway construction program is an important feature of the program and is directly connected with the measures taken for increasing automobile transport.

The 900-mile Turkestan-Siberian Railway is to be completed by May 1930. The construction of new railways is being expanded beyond the original program. The operations of railways have exceeded the schedules by so large a margin that it is expected to fulfill the five-year program of railway transport within three years.

Federal Budget

The federal budget, as was shown earlier, will be one of the principal means of financing the great development program. The budget for 1929-30, as approved by the Council of People's Commissars, totals 11,621 million rubles (\$5,984,000,000), exceeding the actual revenues for 1928-29 by 44.7 per cent. Receipts in 1928-29 exceeded the estimate substantially, as was also the case in previous years.

Tax revenues (5,378 million rubles) will constitute less than half the total receipts. It may be noted that the estimated agricultural tax revenue (415 million rubles) is considerably below the actual receipts for 1928-29. Other taxes, customs duties and excises will show substantial gains.

The revenue from state enterprises and properties is scheduled to more than double (increasing from 809 million to 1,750 million rubles). Industry, which will account for almost half this total (854 million rubles), is expected to show a more than threefold gain, due to reductions in costs. Large gains are also scheduled for trading operations and for the transportation and communication systems.

Receipts from state internal loans are expected to attain a total of 1,335 million rubles—92 per cent more than the actual receipts in 1928-29. Here it should be noted that the expenditure side of the budget includes 450 million rubles for debt service and 65 million additional for the reduction of the special Economic Reconstruction Loan. Thus, the net receipts from loans for 1929-30 are planned at only 820 million rubles.

The principal item on the expenditure side is the financing of the national economy. This will absorb (not including the Commissariats for Transportation and Posts and Telegraph, and administrative expenditures for various other commissariats) a total of 3,832 million rubles as compared with 2 billion rubles actually spent in 1928-29.

Results of the First Quarter of 1929-30

Some preliminary data as to the fulfillment of the revised program in the first quarter of 1929-30 are available at the time of writing. The results have not been as satisfactory as was expected although, in every instance, the production figures are considerably above those of the same period of the previous year. The production of coal, for instance, for the first three months of 1929-30 was 11,574,000 metric tons—an increase of 19 per cent over the corresponding quarter of the preceding year; oil production (3,838,000 tons) was 10 per cent above, and steel (1,338,600 tons) 17 per cent greater.

The failure of industry to live up to the expanded program in the first quarter of the year should not obscure the fact that industrial production on the whole exceeded by almost 27 per cent that of the corresponding three months of 1928-29 and showed a greater gain than that scheduled in the original Five-Year Plan and also than that recorded in the three preceding years. A further improvement was noted in January 1930, which established a new all-time record for Russian industry.

In this connection it should be kept in mind that the enlarged program of industrial expansion started in 1928-29 has had only a short time in which to gain momentum. A number of favorable factors will make their presence felt later in the year. For instance, this year some of the industrial enterprises now nearing completion will start producing. The continuous labor week, which will necessarily result in a large increase in production, has so far affected only a small part of industry and is fast being extended to many additional plants. The supplies of raw material will also be greater later in the year when the procurements of industrial crops are completed. In view of these factors, there is no reason to expect that the program for the year will not be fulfilled.

The Five-Year Plan, the possibility of the fulfillment of which was at first greeted with considerable skepticism abroad, is now giving rise to some exaggerated reports in

regard to its ultimate production aims. In this connection, it may be pointed out that even at the end of the five-year period, the per capita production and consumption of many basic products in the U.S.S.R. will be far below that of the United States, and also lower than that of some leading European countries.

The output of coal in 1933 is scheduled to attain 75,000,000 tons as compared with eight times that figure for the United States. Oil production, even if the highest proposed program is put into effect, will be below 300,000,000 barrels, or less than a third the total attained in the United States in 1929. The maximum steel ingot production planned is about 12,500,000 tons, as compared with 55,000,000 tons in the United States. The per capita figures will work out still more unfavorably for the Soviet Union on account of its greater population.

For many years to come the fast-growing population of the Soviet Union will absorb most of the increased production of the country. Moreover, as the development of the country proceeds to a higher economic and cultural level, it may be expected, judging from the experience of the most industrially advanced countries, that the expanding needs of the population will necessitate an ever-increasing recourse to foreign markets.

CHAPTER VI

THE PROSPECTS OF SOVIET-AMERICAN TRADE

THE intensification of the industrialization process in the Soviet Union, together with the rapid expansion of large-scale farming and the introduction of automotive transport present possibilities for the further development of Soviet-American economic relations far greater than those ever before existing. The requirements of large-scale specialized industrial equipment of the type manufactured in the United States are continually becoming greater. The development of the huge grain farms makes it imperative to supply them with large quantities of powerful tractors and the types of agricultural machinery which have been evolved in the United States. In the automobile development of the U.S.S.R. this country may play an important part. The three automobile plants under construction in the Soviet Union are employing American technical skill, and large quantities of American machinery are being purchased. Enormous possibilities are afforded also by the extensive road-building program embarked upon to keep pace with the developments in automotive transportation.

Many large American corporations are already rendering technical assistance in the construction of some of the most important Soviet enterprises and, in addition, individual engineers are being engaged. This, naturally, also helps to pave the way for the further introduction of American equipment. An important point in this connection is that many of the industries in which American engineers are furnishing consulting services are new to the U.S.S.R. and, therefore, the methods employed and the type of equipment initially installed in these industries

will undoubtedly influence the future preferences of Soviet executives and engineers.

The fact that during 1929-30 alone the Soviet Union is to invest two billion dollars in new construction and improvements in industrial and power plants (a substantial part of which will go for equipment, partly of foreign manufacture), indicates that the possibilities of Soviet-American trade, in spite of a turnover already more than three times that of the pre-war years, have barely been touched. The figure for capital investments is double that of 1928-29, when the Soviet Union imported industrial, agricultural and transportation equipment to a total value of \$130,691,000, and investments will increase during each of the next few years.

In doing business with the Soviet Union, American manufacturers have the great advantage of dealing with centralized purchasing agencies. The Amtorg Trading Corporation, with purchases totaling \$94,500,000 in 1929, was undoubtedly the largest single buyer of American agricultural and industrial equipment for export.

Incidentally, a single office handles the placing of advertisements in all Soviet trade and technical publications and a biennial catalog is issued by the Amtorg, listing the products of thousands of American firms. This catalog is probably the most comprehensive compendium of American equipment published for circulation in a foreign country. A number of expositions and fairs are organized every year in the U.S.S.R. for the express purpose of acquainting Soviet technicians and foremen with the most modern foreign machinery. These exhibits are visited by technical personnel from all over the country. Facilities are provided for sending American goods to the U.S.S.R. on a consignment basis.

Both the objective and the subjective conditions for a further growth of Soviet-American economic relations exist in the Soviet Union. However, the further progress of trade is largely dependent upon the solution of a number of important questions which have interposed themselves and which become increasingly important as the volume of business becomes greater.

Soviet-American trade in the past few years has been carried on in the face of numerous obstacles. At the present time Soviet organizations do not have any judicial status in this country, and thus have no right to the protection of American courts.

Another point is that under the present extra-legal status ships of either country, on entering the ports of the other, must pay six times the regular port charges paid by vessels flying the flag of countries that have established normal relations. There are also numerous difficulties, due to the absence of consular officials, in such matters as bills of lading, the authentication of legal documents, the procuring of visas, etc. Under the present status there are no reciprocal regulations covering patent rights, copyright, and other matters of importance to business interests.

In other respects, also, economic relations between the two countries are conspicuously abnormal. The rehabilitation of many European countries (characterized by an expansion both of general economy and of foreign trade, especially with the United States) has been effected largely as a result of American loans. Though Soviet commercial organs have a perfect record for fulfilling all their contractual obligations with American firms, in the present situation the Soviet Union has received no loans here and, in fact, the flotation of Soviet loans on the American market is officially prohibited. If such loans were available they could be especially earmarked for American purchases, and through them the volume of such purchases could be increased several times over.

Since its inauguration, the Soviet Government has contracted internal debts to the value of 2,500,000,000 rubles, or less than \$10 per capita. While before the war, Russia absorbed huge foreign loans, Soviet borrowings abroad have been negligible. The opening to the Soviet Union of the possibility of floating loans on the American money market would undoubtedly be a step of decisive importance in the fostering of trade relations between the United States and the U.S.S.R.

The Soviet Union is somewhat handicapped with respect to the method of covering its large unfavorable trade balance with the United States, since Soviet gold is not permitted entry into this country. Soviet trade with this country has showed a large unfavorable balance each year, the accumulated unfavorable balance for the six-year period ending in 1928-29 being no less than \$300,000,000. The opposite situation is true of trade with European countries, the balance being in practically all cases in favor of the Soviet Union.

While in recent years the total foreign trade of the Soviet Union has showed a favorable trade balance, in the earlier years, particularly in the period of 1918-22, there was a large adverse balance which was covered by shipments of gold, a large part of which eventually found their way to the United States.* It is estimated that in the years 1920-22 at least 350 million dollars worth of Soviet gold found its way to the United States Treasury, via Sweden, Switzerland and France. The Soviet Union, a large gold-producing country, exported and imported gold freely to and from the various European countries, including Germany, France, etc. When, however, in March 1928, the Soviet State Bank sent shipments of Soviet gold valued at \$5,000,000 to the United States to augment its deposits in American banks, the U. S. Assay Office refused to accept this gold, which was of recent production, necessitating its reshipment at considerable expense to Europe. If the possibility of shipping Soviet gold directly to the United States existed, the course of Soviet-American trade would be facilitated.

Another important question is that of increasing imports of Soviet products to this country. These remained practically stable during 1926-28, and although they showed a considerable gain in 1929, this was nearly counterbal-

* See "European Currency and Finance," Commission of Gold and Silver Inquiry, United States Senate Foreign Currency and Exchange Investigations. Serial 9, Vol. 2, Washington, 1925.

anced by the gain in purchases, the unfavorable trade balance being almost as large as in the preceding year. In figuring the unfavorable balance of payments, such invisible exports must be included as payments for technical assistance contracts and overhead expenses for maintaining purchasing organizations in this country, insurance, freight, etc. These are only in part counterbalanced by remittances, tourist travel, etc.

Due to the absence of American consular representatives in the U.S.S.R., the Soviet exporter finds it very difficult and sometimes impossible to ship to the United States certain commodities which require consular invoices, etc. These difficulties in exporting Soviet products in turn have an effect upon the purchase of American commodities by the U.S.S.R. In planning its program of imports from various countries, the Soviet Union naturally takes into consideration the possibilities of exporting its products to that country. The U.S.S.R. is not in a position to export manufactured goods to this country in any quantity. However, there are a number of raw materials and mineral products of which the Soviet Union is a large producer, which the United States must import, such as manganese, flax, platinum, lumber, caviar, etc.

The matter of financing Soviet-American trade, particularly Soviet purchases here, has naturally an important bearing on the development of business between the two countries. This is especially true because of the fact that the purchases of the Soviet Union in the United States consist almost entirely of producers' goods (raw materials and industrial and agricultural equipment) which will not yield returns for some time to come. For instance, much of the large quantities of industrial machinery purchased in this country will be installed in new enterprises which will start complete operations only within a period of two or more years. On agricultural machinery the Soviet Government grants the ultimate consumers credits up to five years, which is also true to a great extent of sales of automotive equipment.

These facts point to the necessity for extending larger

credits for longer periods of time and on more favorable terms. A number of American firms have granted credits of three years and more on Soviet orders. While the number of these firms is increasing, the credits received so far, both as to amount and duration, do not measure up to the progress made in Soviet-American trade in recent years and fall far short of realizing the possibilities of economic relations between the two countries.

An important problem in Soviet-American trade relations is that of prices, American equipment being generally priced higher than that produced in Europe. The markets offering the most favorable conditions in this respect will, of course, enjoy an advantage with regard to Soviet business.

In regard to security for loans or credits, it may be stated that in the years of trade relations with foreign countries, there has not been a single instance of any Soviet organization failing to carry out faithfully and promptly all of its obligations. This fact grows out of the very nature of Soviet national economy and foreign trade. The Soviet trading organizations do not represent individual firms, but the combined industries of an entire country. The national economy of the country is controlled and coördinated by centralized state organizations, and a breakdown in any constituent branch of the national economy would be prevented by the application of the resources of the other branches. Incidentally, this disposes of the idea which has found expression in the American press recently to the effect that an unfavorable crop would result in an economic breakdown. The Soviet Union had a poor crop in 1924, when the entire national economy was in a much weaker position than at present and, nevertheless, it was able to handle the situation without foreign aid, assuring an adequate supply of food to the population, and, at the same time, expanding its entire economic life. Besides, it must be recorded that the prospects for a much larger crop in 1930 than in the preceding year are very favorable.

The Commissariat for Trade, which handles the foreign trade monopoly for the government, is able to keep imports

approximately within the limits of export possibilities through the issuance of special import and export licenses. In this manner, the Commissariat was able to turn the unfavorable trade balance of 1927-28 into a favorable one in the following year. The Soviet authorities have been conservative in this respect and have, on the whole, attained notable success in keeping the trade balance favorable.

Another element making for security and stability in dealing with the U.S.S.R. is the fact that Soviet imports consist, in an overwhelming measure, of producers' goods and go for constructive purposes rather than for immediate consumption. The Soviet Union is reinvesting in production perhaps a larger proportion of its national income than any other country.

Another form, aside from loans and credits, which the investment of American capital in the Soviet Union can take is in concessions for the building or operation of industrial enterprises. The Soviet Government about a year ago announced a list of enterprises open for construction, exploitation, or financing by foreign firms. This list includes great projects in almost every branch of industry and agriculture, some of which have already been started by the government itself. (See Appendix 4A and 4B, pp. 138-142.)

The foreign concessions now operating in the U.S.S.R., although not considerable in number or amount of capital invested, have a very satisfactory record of profits earned. The number of operating concessions on February 1, 1929, was 68.

The technical relations between the United States and the Soviet Union, already close, should be considerably strengthened in the coming years. At the present time, more than fifty additional technical assistance contracts are being negotiated in almost all important industries, plus a number of agreements with individual American engineers and technicians who are invited to work in the Soviet Union.

If the doors of the Soviet market, already one of the greatest overseas buyers of American industrial and agricultural equipment and potentially the greatest market, are to be opened wide to American industry, obstacles to com-

mercial intercourse must be eliminated, more favorable conditions created for Soviet importers and the American money market opened to the U.S.S.R. The underlying reason for the failure thus far of American business to adapt itself sufficiently to the needs of the Soviet economic structure, with regard to credits, concessions, etc., lies in the fact that the relations between the two countries are not on a regulated basis, a fact which has been pointed out by many leaders of American business, political and cultural life.

The Soviet market is a comparatively new one for American business, as are American products to the Soviet Union. The mutual will to do business and the activities of the Soviet-American trading organizations have done much to develop the business relations between the two countries and to acquaint the Soviet engineer and executive with American equipment. Machinery and other products manufactured in the United States have made their appearance in all sections of the country, from the Moscow and the Leningrad districts to the Don Basin, the Caucasus and Transcaucasia, from the White Russian Republic to the Urals, Siberia and far-off Kamchatka. It is to be hoped that the far-sighted American business man will soon realize the necessity of adapting himself to the needs of this new and unparalleled market.

APPENDIX 1

INDICATORS OF NATIONAL ECONOMY

TABLE I

PRINCIPAL INDICATORS OF NATIONAL ECONOMY OF THE U.S.S.R., 1913 AND 1926 TO 1930						
	1913	1925-26	1926-27	1927-28	1928-29	1929-30 (program)
I. Population—						
Total on April 1 (millions)	140.0	144.5	147.9	151.3	154.8	158.5
Urban	25.8	25.3	26.7	27.9	29.3	30.7
Rural	114.2	119.2	121.2	123.4	125.5	127.8
II. Labor—						
Total number of persons working for hire, annual averages (thousands)	11,200.0	10,217.7	10,989.8	11,455.6	12,150.5	13,293.0
In census industry (thousands)	2,900.0	2,678.0	2,838.6	3,033.3	3,269.9	3,456.0
Index of monthly real wages for workers in large-scale industry (including municipal services)	100.0	106.9	119.1	132.7	138.6	155.0
III. National Income—						
Million pre-war rubles	14,025	13,376	14,780	16,013	17,972	21,854
IV. Industry—						
A. Producers' Goods—						
Production of power (million kwh.) ..	1,945	3,240	3,910	5,160	6,465	8,693
In regional public utility plants (million kwh.) .....	.....	1,110	1,430	1,814	2,400	3,706
Coal (million metric tons)	28.9	25.4	32.1	35.4	40.6	51.6
Oil (million metric tons)	9.3	8.5	10.3	11.8	13.7	16.2
Peat (million metric tons)	1.55	4.26	5.90	6.45	7.45	10.50
Iron ore (million metric tons)	9.21	3.32	4.80	6.01	7.12	10.80
Pig iron (million metric tons)	4.21	2.22	2.96	3.30	4.02	5.50
Steel ingots (million metric tons)	4.25	2.00	3.00	4.15	4.72	6.10
Rolled steel (million metric tons)	3.5	2.2	2.8	3.3	4.7	6.10
Copper bars (thousand metric tons) ...	32.0	12.0	21.3	28.3	38.0	48.5
Agricultural machinery (million rubles at pre-war prices)	67	70	97	129	185	324

TABLE I—Continued

	1913	1925-26	1926-27	1927-28	1928-29	1929-30
Cement (million barrels)	12.3	8.5	9.7	11.9	14.4	22.0
Bricks (million pieces)	2,144	1,037	1,398	1,691	2,880	5,100
Superphosphates, 14 per cent standard (thousand metric tons)	55	80	90	150	213	475
Sulphuric acid, 100 per cent (thousand metric tons)	150.0	146.5	168.8	208.1	271.8	425.0
B. Consumers' Goods—						
Cotton cloth (million meters)	1,625	2,209	2,484	2,695	2,952	3,280
Cotton yarn (thousand metric tons) ..	271.0	240.0	277.0	322.2	352.7	394.4
Woolen cloth (million meters)	89.0	65.4	83.7	96.4	113.2	131.2
Granulated sugar (thousand metric tons)	1,290	1,063	870	1,340	1,280	1,070
Salt (thousand metric tons)	1,978	1,537	2,061	2,365	2,670	3,300
Rubber footwear (million pairs)	27.9	25.1	29.6	36.3	42.2	53.0
Leather shoes (million pairs)	5.5	12.0	15.3	23.6	40.0	62.0
Matches (million cases)	3.76	4.03	4.25	5.50	7.0	9.5
Total output of census industry (bil- lion pre-war rubles)	6.39	6.02	6.88	8.43	10.24	13.45
V. Transportation—						
Length of railway lines in operation (thou- sand kilometers)	58.5	74.6	75.7	76.9	77.6	78.0
Railway freight operations (billion ton-km.)	65.7	68.9	81.7	88.2	106.7	127.0
Railway passenger operations (billion pas- senger-km.)	25.2	23.4	22.1	23.6	29.5	33.0
Freight carried by railways (million metric tons)	132.4	116.7	135.9	150.6	176.5	215.0
Freight carried on inland waterways (mil- lion metric tons)	48.2	33.1	35.2	39.0	46.9	64.5
Freight carried by merchant marine (mil- lion metric tons)	36.9	16.6	18.9	19.5	25.0	34.1
Total freight carried by transport system (million metric tons)	217.5	166.4	190.0	209.1	248.4	313.6

TABLE I—Continued

	1913	1925	1926	1927	1928	1929	1930 (program)
VI. Agriculture—							
A. Total Sown Area* (million hectares)							
Grain crops (million hectares)	114.2	106.3	112.3	115.0	115.7	120.4	130.4
Industrial crops (mill. h'tares)	100.2	89.1	95.4	97.1	94.9	98.2	105.5
Cotton, unginned (million hectares)	5.48	7.16	6.75	7.20	8.54	8.78	10.19
Sugar beets (million h't'r's)	0.70	0.60	0.66	0.75	0.91	1.04	1.38
Oil seeds, except flaxseed (million hectares)	0.62	0.53	0.54	0.66	0.77	0.78	0.96
Other industrial crops (million hectares)	4.09	5.94	5.46	5.69	6.77	6.87	7.73
Miscellaneous (mill. h'tares)	0.07	0.09	0.09	0.10	0.09	0.09	0.12
	8.52	10.04	10.15	10.79	12.26	13.42	14.71
B. Gross Production—							
Grain (million centners †)...	801.0	746.7	783.8	735.8	726.7	762.5	889.0
Cotton, unginned (mill. cent.)	7.44	5.65	5.59	7.18	8.22	9.76	14.52
Flax (million centners)	4.54	3.62	3.10	2.76	3.52	4.28	4.80
Sugar beets (million centners)	109.0	90.7	63.7	104.1	101.4	84.0	149.0
Oil seeds (million centners) ..	25.5	34.8	27.5	33.2	34.5	35.7	44.7
Dairy products (mill. centners)	245.0	288.0	312.0	323.3	310.0	337.2	.....
Eggs (millions)	9,000	8,464	9,550	10,469	10,195	11,724	.....
C. Live Stock—							
In equivalent of million head of cattle	84.9	76.2	81.1	86.4	90.2	89.3	92.7
Working horses (in million head)	27.3	19.9	21.2	22.8	24.0	24.3	25.2
D. Total Production							
Billion pre-war rubles	10.2	10.3	11.1	11.0	11.2	11.5	13.1

* Cultivated area is shown as originally sown, exclusive of area of winter crops resown.

† One centner = $\frac{1}{10}$ metric ton or 220 pounds.

TABLE
INDICATORS OF NATIONAL
(PROGRAM AND

I. LABOR, AVERAGE NUMBER OF PERSONS WORKING FOR HIRE, INCLUDING AGRICULTURAL PURSUITS, in thousand persons.....	
II. NATIONAL INCOME, in million rubles—	
1. In prices of each year.....	
2. In prices of 1926-27.....	
III. CAPITAL INVESTMENTS IN BASIC FUNDS OF SOCIALIZED SECTOR OF NATIONAL ECONOMY, in million rubles, at prices of each year.....	
IV. ELECTRIFICATION—	
1. Capacity at end of year, excluding industrial power plants, in thousand kilowatts	
Regional public utility plants.....	
2. Production of power, excluding industrial plants, in million kilowatt-hours... Regional plants, in million kilowatt-hours.....	
3. Capital investments, excluding industrial power plants, in million rubles in prices of each year.....	
V. INDUSTRY—	
A. All industry—	
1. Gross output, in million rubles, at prices of 1926-27	
Census industry	
Small-scale industry, including milling.....	
2. Gross output, in million rubles, at prices of respective years.....	
Census industry	
Small-scale industry, including milling.....	
B. Industry under supervision of Supreme Economic Council—	
1. Gross production, in million rubles, at prices of 1926-27.....	
Producers' goods industries	
Consumers' goods industries	
2. Number of workers, in thousands.....	
3. Value of annual production per worker, in rubles, at prices of 1926-27.....	
4. Production costs (1927-28 = 100).....	
5. Capital investments, in million rubles, at prices of each year.....	
Producers' goods industries	
Consumers' goods industries	
Miscellaneous	
VI. AGRICULTURE—	
1. Gross production, in million rubles, at prices of 1926-27 †	
2. Machinery supplied, in million rubles	
3. Tractors supplied, in thousand 10-h.p. units.....	
4. Consumption of mineral fertilizer, except lime and oil-cake flour, in thousand tons	
5. Capital investments in socialized sector, in million rubles, at prices of each year	
VII. TRANSPORTATION—	
1. Freight operation of railways, in billion ton-kilometers.....	
2. Revenue of railways, in million rubles.....	
3. Capital investments, in prices of each year, in million rubles.....	
Railways	
VIII. BUDGET, in million rubles—	
1. Federal revenue.....	
2. Financing, in federal budget.....	
Industry	
Electrification	
Transportation	
Agriculture (except expenditures on budget of Commissariat for Agriculture)	
Irrigation	
Miscellaneous	
IX. INDEXES (1913 = 100)—	
1. Producers' prices, industrial products.....	
2. Prices paid by marketing agencies for agricultural products.....	
Grain	
Industrial crops.....	
Animal products.....	
3. Cost of living index.....	

* The figures in this table differ somewhat from those given elsewhere (particularly for estimated according to the methods used in the Five-Year Plan. These methods have been
† Percentages are estimated on the basis of exact not rounded figures as given here.

II

ECONOMY, 1927-28 to 1929-30 *

ACTUAL RESULTS)

			1929-30		Per Cent of Preceding Year †			
1927-28,	1928-29		Revised		1928-29		1929-30	
Actual	5-yr. Plan	Actual	5-yr. Plan	Program	5-yr. Plan	Actual	5-yr. Plan	Program
11,456	11,901	12,150	12,793	13,293	104.9	106.1	107.5	109.4
24,681	27,469	29,222	30,884	33,079	111.3	118.4	112.4	113.2
24,429	27,031	27,458	31,299	33,059	110.7	112.4	115.8	120.4
4,042	5,270	5,560	7,414	10,003	....	137.6	140.7	180.0
868	1,003	1,060	.....	1,631	114.0	122.1	....	153.9
528	603	662	.....	1,160	116.0	125.4	....	175.2
2,503	3,248	3,225	.....	4,693	135.3	128.8	....	145.5
1,814	2,415	2,400	.....	3,706	129.1	132.3	....	154.4
269	332	369	453	614	116.9	137.2	136.4	166.4
19,093	21,164	22,292	25,009	28,050	115.6	116.8	118.2	125.8
14,131	16,439	17,115	19,885	22,497	118.4	121.1	121.0	131.4
4,962	4,725	5,177	5,124	5,553	106.7	104.3	108.4	107.3
18,314	20,358	21,401	23,081	26,406	113.4	116.9	113.4	123.4
13,566	15,646	16,416	18,097	21,108	115.7	121.0	115.7	128.6
4,748	4,712	4,985	4,984	5,293	106.4	105.0	105.8	106.3
11,067	13,246	13,693	16,091	18,092	121.4	123.7	121.5	132.1
4,663	5,516	6,052	6,960	8,782	125.6	129.8	126.2	145.1
6,404	7,730	7,641	9,131	9,310	118.6	119.3	118.1	121.9
2,132	2,194	2,298	2,280	2,430	104.3	107.3	104.1	105.7
5,190	6,037	5,957	7,060	7,446	116.4	114.8	117.0	125.0
100.0	93.0	95.0	86.0	84.5	93.0	95.0	92.5	89.0
1,325	1,659	1,679	2,331	3,267	125.9	126.7	140.5	194.6
950	1,224	1,239	1,738	2,489	130.5	130.4	142.0	200.9
365	363	363	482	472	99.5	99.5	132.8	130.0
10	72	77	111	306	....	770.0	154.0	397.0
14,526	15,037	14,787	16,303	15,186	103.5	101.8	108.4	102.7
149	220	220	304	406	147.7	147.7	138.2	184.5
3.3	9.7	9.7	25.0	41.0§	290.1	290.1	258.8	422.7
216	558	428	1,776	1,066	215.4	198.1	318.3	248.8
243	611	664	1,049	1,636	....	273.2	171.7	246.4
88.2	97.0	106.7	108.7	127.0	110.1	121.0	112.1	119.0
1,730	1,830	2,025	2,095	2,439	112.4	117.1	114.5	120.4
943	1,101	1,205	1,430	1,840	124.3	127.8	129.9	152.7
757	844	942	1,087	1,335	118.2	124.4	128.8	141.7
6,836	7,752	8,103	9,178	11,261	115.4	118.5	118.4	139.0
1,959	2,705	2,809	3,310	4,813	139.2	143.4	122.4	171.3
659	945	986	1,090	1,789	145.1	149.6	115.3	181.4
135	184	175	225	310	135.9	129.6	122.3	177.1
535	732	770	1,018	1,244	131.4	143.9	139.1	161.6
161	335	350	353	618	210.7	217.4	105.4	176.6
35.5	40	39	65	110	109.3	109.9	162.6	282.1
423.5	469	489	559	742	....	115.0	119.0	152.0
185.3	182.7	184.8	174.7	180.2	98.6	99.7	95.6	97.5
156.4	165.0	183.3	164.2	178.8	105.5	117.2	99.5	97.5
134.6	156.6	190.4	155.4	180.6	116.3	141.5	99.2	94.9
139.8	144.6	146.0	144.6	146.2	103.4	104.4	100.0	100.1
181.8	183.4	197.6	183.0	198.7	100.9	108.7	99.8	100.6
199.9	205.5	209.7	200.4	204.5	102.8	104.9	97.5	97.5

national income and agricultural production), since for the purposes of comparison they are slightly revised.

† Crops are for 1927, 1928 and 1929.

§ The figure for tractors supplied has been raised to 54,000 units.

TABLE
CULTIVATED AREA AND PRODUCTION
PRODUCTS, 1927
(program and

		1927	1928	
			In 5-Year Plan	Actual
	Unit	Actual		
A. Area under cultivation—				
Total area sown	million hectares	115.0	115.5	115.7
Area harvested	" "	114.4	115.5	113.0
Grain crops	" "	96.4	94.9	92.1
State farms	" "	.8	.8	.8
Collective farms	" "	.6	1.1	1.1
Cotton	" "	.7	.9	.9
Flax fiber	" "	1.1	1.3	1.3
Sugar beets	" "	.7	.8	.8
Miscellaneous	" "	15.5	17.6	17.9
B. Gross production—				
Grain crops	million centners *	735.8	735.4	726.7
State farms	" "	9.1	9.5	9.5
Collective farms	" "	4.9	8.4	8.4
Flax	thousand centners	2,344	3,091	3,042
Cotton, unginned	" "	7,183	8,902	8,220
Sugar beets	million "	104.1	101.0	101.4
Milk	" "	323.3	319.1	310.0
Meat	thousand "	41,251	43,600	48,643
Hides	thousands	13,359	14,500	16,712
Skins	"	68,920	70,413	78,903
C. Production put on market—				
Grain	million centners	83.3	77.6	83.3
Sugar beets	thousand "	97,800	97,293	93,700
Milk	" "	62,900	54,500	61,500
Meat	" "	12,924	14,000	15,885
Hides	thousands	11,177	13,000	14,624
Skins	"	34,021	36,000	39,385
D. Live stock (in spring of each year)—				
Horses, total	million head	31.2	32.2	33.2
Working horses	" "	21.5	22.4	22.6
Cattle, total	" "	67.3	67.2	69.8
Cows	" "	29.5	29.8	30.3
Swine	" "	22.6	25.5	25.6

* Centner = $\frac{1}{10}$ metric ton or 220 pounds.

† Including state, collective and individual farms.

‡ These figures are based on the estimates of the State Planning Commission in the comparison with the control figures, while the actual results, judging from preliminary reports,

III

OF PRINCIPAL AGRICULTURAL TO 1930 †

actual results)

				Per Cent of Preceding Year					
1929		1930		1928		1929		1930	
In 5-Year Plan	Actual	In 5-Year Plan	Revised Program	In 5-Year Plan	Actual	In 5-Year Plan	Actual	In 5-Year Plan	Revised Program†
123.5	120.4	129.8	130.4	99.9	100.6	106.9	104.0	105.1	108.4
123.5	118.0	129.8	130.4	....	98.8	106.9	104.0	105.1	110.6
101.4	95.8	105.3	105.5	97.4	95.5	106.8	104.0	103.8	110.1
1.2	1.2	1.5	2.5	....	108.5	138.9	139.2	130.4	215.0
2.5	3.4	4.4	11.4	....	165.9	236.5	323.6	176.0	332.3
1.1	1.0	1.3	1.4	122.8	122.2	120.1	113.2	113.3	132.9
1.4	1.5	1.5	1.6	107.4	112.8	107.9	113.5	106.6	108.8
.9	.8	.9	1.0	115.9	112.8	110.4	113.5	109.2	108.8
18.7	18.9	20.8	20.5	....	115.5	106.2	105.6	111.2	....
814.2	762.5	883.0	889.0	100.6	98.8	110.7	104.9	108.5	116.6
12.9	12.8	16.3	28.2	....	104.4	135.8	134.7	126.4	220.3
23.0	29.1	42.2	103.8	....	171.4	273.8	346.4	183.5	356.7
3,351	3,697	4,256	4,160	124.7	129.8	108.4	121.5	127.0	112.5
10,899	9,766	13,608	14,520	123.9	114.4	122.4	118.8	124.9	148.7
124.1	84.0	150.4	149.0	100.0	97.4	122.9	82.8	121.2	177.4
334.7	337.2	....	....	102.9	95.9	104.9	108.8	....	....
44,252	39,733	....	....	103.5	117.9	101.5	81.7	....	....
14,000	14,068	....	....	103.0	125.1	96.6	84.2	....	....
73,230	74,760	....	....	105.3	114.5	104.0	94.7	....	....
95.8	102.2	125.4	150.0	96.0	100.0	123.5	122.7	130.9	146.9
118,700	80,500	....	....	99.7	95.8	122.0	85.9	....	....
61,076	68,000	....	....	105.6	97.8	112.1	110.6	....	....
14,230	12,760	....	....	103.7	122.9	101.6	80.3	....	....
12,500	12,768	....	....	105.4	130.8	96.2	87.3	....	....
39,544	42,000	....	....	113.6	115.8	109.8	106.6	....	....
33.7	34.0	34.9	35.2	104.5	106.5	104.5	102.3	103.5	103.5
23.3	22.9	24.0	23.8	104.2	105.0	104.1	101.3	103.2	103.9
69.0	68.1	72.8	71.1	101.2	103.6	102.7	97.6	105.5	104.5
30.6	30.3	32.0	31.4	101.5	102.9	102.7	100.0	104.6	103.5
25.8	20.9	27.9	23.0	112.6	113.6	101.2	81.5	108.1	110.0

control figures for 1929-30. Early in 1930 the program for collective farms was doubled in may greatly exceed even the new program.

TABLE IV
OUTPUT OF PRINCIPAL INDUSTRIAL PRODUCTS, 1927-28 TO 1929-30
(PROGRAM AND ACTUAL RESULTS)

	Unit	1927-28			1928-29			1929-30			Per Cent of Preceding Year		
		5-Year			5-Year			5-Year			5-Year		
		Actual	Plan	Actual	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
1. Oil	million tons	11.8	13.2	13.7	13.7	14.8	16.2	16.2	112.8	116.8	112.1	118.2	118.2
2. Coal	"	35.4	41.1	40.6	40.6	46.6	51.6	51.6	116.1	114.6	113.4	127.2	127.2
3. Iron ore	"	6.0	7.1	7.1	7.1	10.2	10.8	10.8	124.6	118.3	143.7	150.7	150.7
4. Pig iron	"	3.3	4.1	4.0	4.0	5.0	5.5	5.5	124.2	121.2	122.0	137.5	137.5
5. Rolled steel	"	3.3	3.6	3.8	3.8	4.0	4.7	4.7	112.5	115.2	111.1	123.7	123.7
6. General machinery, at prices of 1926-27....	million rubles	591	737	792	792	959	1,145	1,145	126.4	134.0	130.1	144.5	144.5
7. Agricultural machinery, at prices of 1926-27....	"	148	210	212	212	262	371	371	137.2	143.0	131.0	175.1	175.1
8. Bricks, total output....	billions	1.7	2.6	2.9	2.9	4.2	5.1	5.1	129.4	170.3	154.5	177.1	177.1
9. Cement	million barrels	11.9	14.0	14.4	14.4	19.5	22.0	22.0	117.6	120.9	139.3	152.9	152.9
10. Superphosphates (14 per cent standard)	thousand tons	150	261	213	213	480	475	475	174.0	142.2	183.9	223.0	223.0
11. Cotton yarn	"	322	362	353	353	400	394	394	110.4	109.5	110.5	111.8	111.8
12. Cotton cloth	million meters	2,695	2,970	2,952	2,952	3,266	3,280	3,280	108.3	109.5	110.0	111.1	111.1
13. Woolen cloth	"	96.4	105.4	113.2	113.2	124.0	131.2	131.2	109.1	117.4	117.6	115.9	115.9
14. Paper and cardboard....	thousand tons	320	410	411	411	510	481	481	129.7	138.4	124.4	117.0	117.0
15. Granulated sugar.....	"	1,340	1,340	1,280	1,280	1,600	1,070	1,070	100.0	95.5	119.4	83.6	83.6
16. Salt	million tons	2.4	2.5	2.7	2.7	2.7	3.3	3.3	108.9	112.9	108.0	123.6	123.6

TABLE V
PRODUCTION OF GENERAL MACHINERY, 1927-28 TO 1929-30

PRODUCT	1927-28	1928-29	Program 1929-30
Railway locomotives (units)	459	559	618
Industrial locomotives (units)	113	151	265
Large freight cars (units)	2,312	3,260	5,300
20-ton freight cars and gondolas (units)	7,086	7,290	9,800
Passenger railway cars (units)	440	391	524
Trolley cars (units)	414	426	470
Boilers (thousand square meters) ..	96.1	135.0	171.4
Diesel engines (thousand h.p.)	44.7	81.0	125.0
Oil engines (thousand h.p.)	64.0	89.0	162.0
Steam turbines (thousand kw.)	35.7	120.0	172.2
Hydraulic turbines (thousand h.p.)	6.0	17.5	41.2
Machine tools (thousand rubles) ...	6,900	7,700	14,400
Wood-working machinery (thousand rubles)	1,540	2,000	3,400
Mining and metallurgical equipment, including oil equipment (thou- sand rubles)	10,000	24,700	38,600
Equipment for construction shops (thousand rubles) .....	.....	2,500	10,700
Mechanical equipment for construc- tion work (thousand rubles) ....	.....	2,132	7,900
Road machinery (thousand rubles) .	594	768	9,000
Chemical machinery (th'sand ru'l's)	3,300	9,800	20,000
Textile machinery (thousand rubles)	24,500	20,750	31,800
Shoe and leather machinery (thou- sand rubles)	1,685	1,115	3,600
Automobiles (units)	800	1,900	14,900
Tractors (units)	1,218	3,229	10,800
Bicycles (thousand units)	11.0	25.0	32.0
Sewing machines (thousand units) ..	285.8	425	500

TABLE VI
PRODUCTION OF AGRICULTURAL MACHINERY, 1927-28 TO 1929-30

	1927-28	1928-29	Program 1929-30
	(in thousands)		
A. Horse-drawn implements—			
Plows	1,142.5	1,683.6	2,618
Grain drills	51.5	100.3	283
Binders	0.5	1.0	5.0
Hay mowers	57.0	81.6	135.0
Rakes .....	.....	1.0	41.0
Grain separators .....	.....	7.8	24.0
B. Tractor-drawn implements—			
Plows	0.5	2.94	18.1
Tooth harrows .....	.....	0.1	14.0
Cultivators .....	.....	0.1	3.5
Grain drills .....	.....	0.32	3.5
Threshers	1.4	3.6	7.5
Wagons .....	.....	1.0	14.0

TABLE VII
FINANCIAL PLAN OF SOCIALIZED ECONOMY

	A. REVENUE			
	1928-29		1929-30	
	Million Rubles	Per Cent of Total	Million Rubles	Per Cent of Total
State Economy—				
Federal budget	6,202.0	50.8	9,475.0	52.0
Local budgets and self-taxation	1,055.5	8.7	1,343.0	7.4
Banking system (own resources)	1,513.0	12.4	1,894.0	10.4
Social insurance	916.0	7.5	1,045.0	5.7
State insurance	234.2	1.9	349.0	1.9
Funds of economic enterprises	942.6	7.7	1,739.0	9.6
Miscellaneous	429.7	3.5	933.0	5.1
Total	11,293.0	92.5	16,778.0	92.1
Coöperatives	533.4	4.4	1,000.0	5.5
Trade Unions	376.0	3.1	444.0	2.4
Grand Total	12,202.4	100.0	18,222.0	100.0

REVENUE DISTRIBUTED BY ULTIMATE SOURCES OF INCOME

	1928-29		1929-30	
	Million Rubles	Per Cent of Total	Million Rubles	Per Cent of Total
Profits of economic enterprises	3,797.0	31.2	6,663.4	36.6
Taxes	4,205.6	34.5	5,667.6	31.2
Attracted funds (borrowings, etc.)	1,625.6	13.3	2,590.0	14.2
Insurance funds	1,360.0	11.1	1,657.0	9.0
Currency issue	200.0	1.6	425.0	2.3
Miscellaneous	1,014.2	8.3	1,219.0	6.7
Total	12,202.4	100.0	18,222.0	100.0

B. EXPENDITURES

	1928-29		1929-30	
	Million Rubles	Per Cent of Total	Million Rubles	Per Cent of Total
Administration and defense	1,637.4	13.4	1,864.0	10.2
Financing of national economy	6,646.1	54.5	11,119.5	61.0
Industry	2,555.4	20.9	4,062.3	22.3
Agriculture *	936.7	7.7	1,583.5	8.7
Transportation	1,141.3	9.4	1,727.2	9.5
Miscellaneous	2,012.7	16.5	3,746.5	20.5
Social and cultural needs	3,034.7	24.9	4,152.2	22.8
Miscellaneous	884.2	7.2	1,086.3	6.0
Total	12,202.4	100.0	18,222.0	100.0

* In addition, 450,000,000 rubles were invested in 1928-29 from the funds of the population and of economic enterprises. The corresponding investments for 1929-30 are expected to reach 1,095,000,000 rubles.

TABLE VIII-A

SUMMARY OF FEDERAL BUDGET, 1928-29 AND 1929-30

A. REVENUE

	1928-29 (actual)	1929-30 (estimate)
	(in thousand rubles)	
I. Direct Taxation	1,795,922	2,627,257
II. Indirect Taxation	2,055,229	2,589,200
III. Stamp Duties and Other Dues	144,244	161,500
Total revenue from taxation	3,995,395	5,377,957
IV. State Property and Enterprises	808,940	1,750,052
V. Loans Repaid and Interest	37,627	28,940
VI. Miscellaneous Revenue	110,617	40,855
VII. State Loans	693,900	1,335,000
VIII. Surplus from Previous Years	113,064	.....
IX. Commissariat for Transportation ..	2,079,244	2,798,961
X. Commissariat for Posts and Tele- graphs	198,102	260,600
XI. Revenue from Coin Issue .....	.....	28,735
GRAND TOTAL...	8,036,889	11,621,100

B. EXPENDITURES

	1928-29 (actual)	1929-30 (estimate)
	(in thousand rubles)	
I. Federal Government Departments....	1,102,576	1,419,728
II. Payments to Commissariats and In- stitutions of Constituent Republics	598,975	798,605
III. Special Funds	144,046	289,067
IV. Service on Loans	294,127	450,000
V. Financing of National Economy (ex- clusive of allotments on budgets of various departments)	2,000,260	3,896,875
VI. Payments to local budgets (incl. ex- penditures of Autonomous Repub- lics)	1,283,498	1,559,626
VII. Commissariat for Transportation (ex- cept railway schools and new rail- way construction)	2,336,198	2,849,599
VIII. Commissariat for Posts and Tele- graphs	198,102	267,600
IX. Miscellaneous	63,353	90,000
GRAND TOTAL...	8,021,135	11,621,000

TABLE VIII-B

FEDERAL BUDGET FOR 1929-30

A. REVENUE

I. Direct Taxation

(in rubles)

1. Single agricultural tax.....	415,000,000
2. Turnover tax	1,814,430,000
3. Income tax	369,445,000
4. Excess profits tax.....	18,050,000
5. Inheritance and gift tax.....	3,331,500
6. Tax on cotton.....	7,000,000

Total direct taxation..... 2,627,256,500

II. Indirect Taxation

1. Excise taxes	2,217,200,000
2. Customs duties	372,000,000

Total indirect taxation..... 2,589,200,000

III. Stamp Duties and Other Dues

1. Stamp duties	80,000,000
2. Other dues	81,500,000

Total 161,500,000

TOTAL REVENUE FROM TAXATION.... 5,377,956,500

IV. State Property and Enterprises

1. Industry	854,000,000
2. Commerce	212,183,650
3. Banks	117,037,600
4. Forests	450,250,000
5. Mines	79,278,000
6. Other state property and enterprises....	32,277,000
7. Concessions	5,026,000

Total revenue from state property and enterprises 1,750,052,250

V. Loans Repaid and Interest..... 28,940,000

VI. Miscellaneous Revenue

40,855,750

VII. State Loans

1,335,000,000

VIII. Commissariat for Transportation..... 2,798,961,000

IX. Commissariat for Posts and Telegraphs 260,600,000

X. Revenue from Coin Issue..... 28,734,500

GRAND TOTAL..... 11,621,100,000

TABLE VIII-B—*Continued*

B. EXPENDITURES

(in rubles)

I. Government Departments and Institutions

1. Departments and institutions of U.S.S.R.	135,160,476
2. Scientific and educational institutions of government departments.....	170,917,884
3. Commissariat for Army and Navy.....	1,046,800,000
4. Special corps	66,850,000
5. Commissariat for Transportation (exclusive of expenditures for railway schools and new railway construction)	2,849,599,000
6. Commissariat for Posts and Telegraphs	267,600,000
7. Departments and institutions of constituent republics	798,604,899
Commissariats for Education.....	355,288,633
Commissariats for Health.....	59,499,951
Commissariats for Social Insurance....	23,114,335
Commissariats for Agriculture.....	203,694,643
Other Departments and Institutions...	157,007,337
Total	5,335,532,259

II. Financing of National Economy

(exclusive of appropriations on budgets of above-mentioned departments and institutions)—

1. Industry	1,886,200,000
2. Electrification	310,000,000
3. Agriculture	658,650,000
4. Water economy	110,000,000
5. Measures for promotion of trade.....	407,000,000
6. Coöperatives	16,000,000
7. Municipal economy and housing.....	120,200,000
8. Construction of new railways.....	265,396,000
9. Miscellaneous	58,250,000
Total	3,831,696,000

III. Special Funds

1. Funds for prevention of cattle plague..	2,500,000
2. Unemployment fund	8,055,000
3. Homeless children	8,500,000
4. Publications	13,822,500
5. Reserve funds of Council of People's Commissars	202,925,837
6. Printing of notes and mint.....	5,000,000
7. Financing of topographic-geodetic and cartographic work	8,099,948
8. Economic reconstruction loan payments	65,180,000
9. Payments for social insurance.....	34,906,956
10. Miscellaneous	5,256,000
Total	354,246,241

TABLE VIII-B—*Continued*

B. EXPENDITURES

(in rubles)

IV. Debt Service	450,000,000
V. Funds Turned over to Local Budgets...	1,426,625,500
Expenditures of Autonomous Republics of the R.S.F.S.R.	133,000,000
VI. State Grain Fund	60,000,000
VII. Cash Reserve of Treasury.....	30,000,000
GRAND TOTAL	11,621,100,000

TABLE IX.—CAPITAL INVESTMENTS IN STATE LARGE-

Industry	New Construction	Expansion and Re-equip-ment	Capital Repair	Labor Safety Measures
I. PRODUCERS GOODS—				
a. Fuel industries.....	195.07	63.95	16.61	12.80
Coal	109.61	38.40	8.66	10.70
Oil	77.48	14.99	6.78	1.96
Peat	7.98	10.56	1.17	0.14
b. Coke and chemical.....	14.00	0.40	....	....
c. Mining	5.11	6.40	0.38	0.45
Asbestos .....	....	5.67	0.20	0.15
Mineral raw materials.....	3.12	....	0.08	0.15
Miscellaneous	1.99	0.73	0.10	0.15
d. Metal industry.....	501.52	328.32	41.01	25.14
Iron and steel.....	143.67	174.95	20.01	11.92
Non-ferrous metal	52.37	17.72	2.33	1.96
Machine building, including agricul- tural machinery	300.48	135.65	18.67	11.26
e. Electro-technical	26.79	18.98	2.40	1.26
f. Chemical producers' goods.....	166.92	35.84	9.28	4.02
Basic chemical	158.42	25.79	5.70	1.96
Wood distillation.....	5.47	....	0.14	0.13
Aniline dyes .....	....	6.78	0.54	0.51
Lacquers and paints.....	0.72	....	0.41	0.19
Laboratory supplies.....	0.34	....	0.14	0.12
Photographic supplies.....	....	....	0.03	0.01
Bone reduction	0.32	1.50	0.10	0.20
Miscellaneous	1.65	1.77	2.22	0.90
g. Construction materials	177.19	40.06	6.29	1.65
Cement	64.73	28.39	3.64	0.60
Fire-proof materials.....	18.20	4.74	0.45	0.20
Brick	44.75	....	1.60	0.30
Lime, alabaster and chalk.....	9.46	....	0.39	0.13
Slate	6.89	....	0.07	....
Roofing paper	1.57	2.16	0.14	0.10
New construction materials.....	17.86	2.65	....	0.25
Scientific and other institutes.....	....	....	....	....
Road building materials	3.73	2.12	....	0.07
Reserve	10.00	....	....	....
h. Glass	15.98	....	1.91	0.85
i. Lumber	77.33	19.59	5.33	3.00
j. Textile producers' goods	16.38	2.75	0.61	0.92
k. Chief Cotton Administration.....	11.89	1.78	1.33	1.33
l. Artificial fiber	24.00	0.78	....	0.10
m. Geological Survey .....	....	....	....	....
n. Scientific Technical Administration.....	....	....	....	....
TOTAL PRODUCERS' GOODS....	1,232.18	518.85	85.15	51.52
II. CONSUMERS' GOODS—				
a. Textile consumers' goods.....	57.74	36.77	27.70	15.21
Cotton	37.19	14.82	18.97	11.24
Wool	7.16	6.29	3.94	1.66
Linen	3.20	8.34	2.75	1.13
Hemp and jute.....	3.02	6.41	1.04	0.41
Silk .....	....	....	0.24	0.28
Felt	2.01	....	0.28	0.10
Knit goods	5.16	0.91	0.48	0.39
b. Chemical consumers' goods.....	20.17	11.21	3.23	1.83
Rubber	19.00	8.58	1.83	1.00
Matches	0.72	2.63	0.32	0.29
Fats and perfumery.....	0.45	....	0.66	0.40
Pharmaceutical—chemical .....	....	....	0.42	0.14
c. China and porcelain	1.59	0.92	0.75	0.45
d. Ready-made clothes	1.66	....	0.64	0.51
e. Leather	13.96	6.41	1.98	1.30
f. Paper	33.01	16.46	2.87	1.42
g. Printing	1.11	1.09	0.88	0.44
h. Food	16.06	3.84	5.50	2.80
i. Salt	6.04	0.11	0.51	0.10
j. Sugar	10.61	2.80	7.25	1.40
TOTAL CONSUMERS' GOODS.....	161.95	79.61	51.31	24.96
TOTAL PRODUCERS' AND CON- SUMERS' GOODS	1,394.13	598.46	136.46	76.48
III. MISCELLANEOUS—				
Reserve .....	....	....	....	....
Technical Colleges .....	....	....	....	....
Power plants .....	....	....	....	....
Construction bureaus .....	....	....	....	....
Loans to building coöperatives.....	....	....	....	....
Miscellaneous .....	....	....	....	....
GRAND TOTAL .....	....	....	....	....

SCALE INDUSTRY FOR 1929-30 (in million rubles)

Workers' Housing in Existing Plants	Fire Prevention Measures	Factory Schools	Raw Materials Base	Designing	Scientific Research and Exploration	Miscellaneous	Total
50.28	3.92	3.21	.....	4.03	74.35	155.63	579.85
31.08	0.89	2.25	.....	2.88	20.84	43.14	268.45
15.74	2.80	0.96	.....	1.15	52.05	112.49	286.40
3.46	0.23	.....	.....	.....	1.46	.....	25.00
0.50	.....	.....	.....	0.50	0.60	.....	16.00
2.83	0.31	0.24	.....	0.36	1.89	8.99	26.96
2.33	0.19	0.24	.....	0.26	0.15	3.43	12.67
0.30	0.06	.....	.....	0.10	0.15	2.04	6.00
0.20	0.06	.....	.....	.....	1.59	3.47	8.29
49.95	5.09	14.45	45.12	21.41	31.84	93.47	1,157.32
32.88	1.81	4.25	40.27	11.69	11.82	64.55	522.82
7.16	0.30	0.50	4.85	1.38	18.64	6.01	113.22
9.91	2.98	9.70	.....	8.34	1.38	22.91	521.28
2.00	0.70	1.00	.....	0.70	0.30	3.97	58.10
15.10	1.71	0.85	.....	7.66	12.34	46.64	300.36
11.67	1.06	0.59	.....	7.00	9.00	26.22	247.41
0.19	.....	.....	.....	0.33	0.55	4.19	11.00
0.90	0.22	0.05	.....	0.20	0.52	3.58	13.30
0.26	0.03	0.05	.....	0.10	0.71	1.93	4.40
0.17	0.01	0.06	.....	0.03	0.09	1.24	2.20
.....	.....	.....	.....	.....	0.01	0.28	0.33
0.09	.....	.....	.....	.....	0.01	0.70	2.92
1.82	0.39	0.10	.....	.....	1.45	8.50	18.80
4.59	0.52	1.30	.....	2.40	10.93	30.62	275.55
2.48	0.10	1.30	.....	1.10	0.90	1.76	105.00
0.45	0.07	.....	.....	0.20	0.60	1.69	26.60
1.18	0.29	.....	.....	.....	0.40	13.48	62.00
0.19	0.06	.....	.....	.....	0.45	5.32	16.00
0.29	.....	.....	.....	.....	.....	0.05	7.30
.....	.....	.....	.....	.....	.....	0.03	4.00
.....	.....	.....	.....	0.10	0.40	.....	21.26
.....	.....	.....	.....	1.00	8.00	8.09	17.09
.....	.....	.....	.....	.....	0.18	0.20	6.30
.....	.....	.....	.....	.....	.....	.....	10.00
1.70	0.13	0.52	.....	0.92	0.58	2.81	25.40
6.80	1.95	1.20	52.18	3.04	3.84	22.79	197.05
1.16	0.29	.....	7.82	0.46	0.03	3.98	34.40
2.75	1.17	.....	20.65	0.30	1.45	2.25	44.90
0.12	.....	.....	.....	0.50	0.50	.....	26.00
.....	.....	.....	.....	.....	40.00	.....	40.00
.....	.....	.....	.....	.....	34.00	.....	34.00
137.78	15.79	22.77	125.77	42.28	212.65	371.15	2,815.89
15.55	3.38	5.00	.....	0.68	0.30	27.57	189.90
11.53	2.15	3.24	.....	0.40	.....	13.93	113.47
0.87	0.31	0.21	.....	0.14	0.25	5.36	26.19
1.70	0.33	0.55	.....	.....	.....	5.28	23.28
0.52	0.21	0.40	.....	0.10	0.02	0.09	12.22
0.60	0.14	0.25	.....	.....	.....	0.69	2.20
0.08	0.03	.....	.....	0.04	0.03	0.50	3.07
0.25	0.21	0.35	.....	.....	.....	0.92	8.67
.....	.....	.....	.....	.....	.....	0.80	0.89
2.58	1.16	0.41	.....	.....	2.05	9.41	52.05
2.20	1.00	0.27	.....	.....	1.32	2.20	37.40
0.35	0.04	0.14	.....	.....	0.07	1.45	6.01
.....	0.05	.....	.....	.....	0.26	2.55	4.37
0.03	0.07	.....	.....	.....	0.40	3.21	4.2

TABLE X-A

**PRINCIPAL INDUSTRIAL PLANTS UNDER CONSTRUCTION
OR TO BE STARTED IN 1929-30 ***

Type of Plant	Region	Scheduled Date of Completion	Estimated Cost, at 1926-27 Prices †
<i>Coal and Coke Industry</i>			
Mines, Donetz Basin	Ukraine	1936-37	520,000,000
Mines, Kizel and Cheliabinsk.....	Ural	1935-36	80,000,000
Mines	Siberia	1935-36	60,000,000
Mines	No. Caucasus	1935-36	54,500,000
Mines, Tula district	Central		
	Industrial	1934-35	47,500,000
Mines, Tkvarcheli	Transcaucasia	1932-33	26,000,000
5 mines	Far Eastern	1934-35	26,000,000
2 Batteries of Coke Ovens, Kuznetz Basin	Siberia	1930-31	12,000,000
Mines	Kazakstan	1935-36	10,000,000
Mines, Kshtut Shur-Ab	Uzbekistan	1933-34	8,000,000
Mines, Gdov	Leningrad	1933-34	6,000,000
<i>Oil Industry</i>			
Construction work of Azneft Oil Trust, Baku-Batum	Transcaucasia	1932-33	311,000,000
Cracking installations of Grozneft, Tuapse	No. Caucasus	1932-33	73,400,000
Installations, Sakhalin Island.....	Far Eastern	1932-33	37,800,000
Pipe line, Emba-Samara.....	Kazakstan	1932-33	25,000,000
Completion of construction of refinery, 1st installation, Tuapse	No. Caucasus	1929-30	18,500,000
Refinery, 2nd installation, Tuapse..	No. Caucasus	1932-33	18,000,000
Enlargement of pipe lines, Grozny- Tuapse	No. Caucasus	1930-31	10,000,000
<i>Mineral Raw Materials</i>			
Mercury mine, Nikitovka	Ukraine	1931-32	6,000,000
<i>Iron and Steel Industry</i>			
Steel, Krivoy Rog	Ukraine	1932-33	192,000,000
Magnet Mountain steel mill, Mag- nitogorsk	Ural	1932-33	.....
Steel, Alapaiev	Ural	1935-36	183,000,000
Steel, Lipetsk	Central Black Soil	1933-34	160,000,000
Steel, Zaporozhye	Ukraine	1932-33	140,000,000
Kuznetz steel mill, Kuznetz Basin..	Siberia	1933-34	130,000,000
Steel mill, 1st installation.....	Crimea	1930-31	56,000,000
Steel mill, 1st installation, Kerch...	Crimea	1933-34	100,000,000
Dnieprostal steel mill, Dnieprostroy	Ukraine	1933-34	40,000,000
Steel mill	Transcaucasia	1932-33	33,000,000
Steel, Tavdin	Ural	1932-33	28,000,000

* Of the thousands of enterprises listed by the State Planning Commission those estimated at 5,000,000 rubles or over are given.

† The actual cost is expected to be lower as a result of measures taken to reduce construction costs. In a number of instances (particularly in the iron and steel industry) projects are being built for greater capacity than scheduled in the Five-Year Plan. Their costs, will therefore, be correspondingly raised. Several projects not listed originally by the State Planning Commission (Cheliabinsk and Kharkov tractor plants, etc.), have also been included.

TABLE X-A

**PRINCIPAL INDUSTRIAL PLANTS UNDER CONSTRUCTION
OR TO BE STARTED IN 1929-30—Cont'd**

Type of Plant	Region	Scheduled Date of Completion	Estimated Cost, at 1926-27 Prices
Steel, Zlatoust	Ural	1931-32	20,000,000
Steel, Mariupol, 1st installation....	Ukraine	1931-32	.....
Dnieprosplay steel-alloy plant, Dnie- prostroy	Ukraine	1932-33	17,500,000
Petrovsky steel mill, Transbaikal Region	Far Eastern	1930-31	11,800,000
Ferro-alloy, Cheliabinsk	Ural	1930-31	10,000,000
Pipe, Tula	Central Industrial	1931-32	6,000,000
Wire, nail and galvanizing, Kuznetz Basin	Siberia	1931-32	5,000,000
<i>Non-ferrous Metals Industry</i>			
Non-ferrous metal works, Balkhash	Kazakstan	1934-35	45,000,000
Ridder combine	Kazakstan	1932-33	45,000,000
Copper refining	Ural	1932-33	38,000,000
Aluminum, Moscow district	Central Industrial	1932-33	36,000,000
Aluminum, Dnieprostroy	Ukraine	1932-33	34,000,000
Copper smelter, Bayan-Aul	Kazakstan	1933-34	30,000,000
Bogomolov copper plant, Urals....	Ural	1930-31	27,500,000
Zinc distillation, Belov, Kuznetz Basin	Siberia	1930-31	25,150,000
Copper plant and concentrates, Kar- sak-Pai	Kazakstan	1932-33	22,600,000
Non-ferrous metal combine, Alagir..	No. Caucasus	1931-32	22,000,000
Ural zinc plant	Ural	1931-32	15,000,000
Electrolytic, Sverdlovsk	Ural	1930-31	12,700,000
Spas copper plant	Kazakstan	1932-33	12,000,000
Concentrates plant and mining, Salair	Siberia	1932-33	9,500,000
Lead and zinc, Kara-Mazar.....	Uzbekistan	1932-33	9,000,000
Copper, Minusinsk, Ust-Abakansk..	Siberia	1932-33	7,500,000
Zinc, Konstantinovka	Ukraine	1930-31	7,000,000
Turlan concentrates works	Kazakstan	1932-33	5,000,000
<i>Machine Building, Shipbuilding and Electrical Industries</i>			
Automobile, Nizhni Novgorod.....	Central Industrial	1932-33	.....
Tractor, Stalingrad	Lower Volga	1931-32	.....
Freight car, Nizhni Tagil	Ural	1932-33	65,000,000
Agricultural machinery, Rostov....	No. Caucasus	1931-32	.....
Electrical factory, Moscow	Central Industrial	1932-33	50,000,000
Car works, Stalingrad	Lower Volga	1933-34	40,000,000
Machine-building, Central Urals....	Ural	1930-31	38,000,000
Agricultural machinery, Novosibirsk	Siberia	1932-33	30,000,000
Shipbuilding, Krasnoarmeisk	Lower Volga	1932-33	15,100,000
Machine tool, Moscow district.....	Central Industrial	1932-33	15,000,000
Boiler, Taganrog	No. Caucasus	1931-32	14,000,000
Lifting equipment and machinery construction, Leningrad	Leningrad	1932-33	13,000,000
Radio apparatus, Nizhni Novgorod	Central Industrial	1930-31	10,400,000
Railway signal equipment, Nizhni Novgorod	Central Industrial	1931-32	10,000,000

TABLE X-A

PRINCIPAL INDUSTRIAL PLANTS UNDER CONSTRUCTION
OR TO BE STARTED IN 1929-30—*Cont'd*

Type of Plant	Region	Scheduled Date of Completion	Estimated Cost, at 1926-27 Prices
Bridge, Central Urals	Ural	1932-33	10,000,000
Drydock, Perm	Ural	1932-33	10,000,000
Shoe machinery, Moscow	Central		
	Industrial	1932-33	9,000,000
Repair and assembly agricultural machinery, Kuznetz Basin	Siberia	1931-32	8,000,000
Electrical apparatus, Leningrad...	Leningrad	1931-32	7,500,000
Shipbuilding, Kiev	Ukraine	1932-33	7,500,000
Tool, Moscow	Central		
	Industrial	1930-31	7,000,000
Engine, Stalingrad	Lower Volga	1932-33	7,000,000
Thresher, Saratov	Lower Volga	1930-31	6,400,000
Tripoli stone	Ural	1932-33	6,090,000
Magneto, Moscow	Central		
	Industrial	1931-32	6,080,000
Optical mechanics, Stalingrad.....	Lower Volga	1932-33	6,000,000
Machine, Gomel	White Russia	1929-30	6,000,000
Bicycle, Moscow	Central		
	Industrial	1931-32	5,000,000

Chemical Industry

Fertilizer combines, at Trituznaya, Dnieprostroy, Krivoy Rog and Krasnodonsk	Ukraine	1932-33	93,000,000
Fertilizer combine, Chirchik.....	Uzbekistan	1932-33	63,000,000
Central chemical combine, Moscow district	Central		
	Industrial	1932-33	60,000,000
Fertilizer combine, Berezninyaky...	Ural	1932-33	42,000,000
Bogomolov fertilizer combine and sulphuric acid plant	Ural	1932-33	29,000,000
Potash mines, Solikamsk.....	Ural	1933-34	26,000,000
Fertilizer combine, Rutchenkovo...	Ukraine	1931-32	25,000,000
Sulphuric acid plant and allied enterprises, Kuznetz Basin.....	Siberia	1932-33	25,000,000
Soda, Slaviansk	Ukraine	1931-32	20,700,000
Soda, Berezninyaky	Ural	1931-32	12,000,000
Don soda, power plant, Donetsk Basin	Ukraine	1930-31	10,500,000
Wood distillation, Ashinsk.....	Ukraine	1931-32	9,000,000
Superphosphate and hydrosulphuric acid, Leningrad	Leningrad	1930-31	7,800,000
Chernorechensky chemical works, Nizhni Novgorod district	Central		
	Industrial	1929-30	7,470,000
Soda, Mikhailov Lake	Siberia	1931-32	6,000,000
Hydrogen recovery, Kemmerovo, Kuznetz Basin	Siberia	1931-32	5,000,000
Wood distillation, Nadezhdinsk....	Ural	1931-32	5,000,000
Soap, Moscow District	Central		
	Industrial	1929-30	5,000,000

Building Materials Industry

Refractory materials, Latnaya.....	Central		
	Black Soil	1931-32	11,500,000
Refractory materials, Chasov-Yar..	Ukraine	1930-31	9,000,000
Cement, Babino	Leningrad	1932-33	8,000,000

TABLE X-A

**PRINCIPAL INDUSTRIAL PLANTS UNDER CONSTRUCTION
OR TO BE STARTED IN 1929-30—Cont'd**

Type of Plant	Region	Scheduled Date of Completion	Estimated Cost, at 1926-27 Prices
Cement, Tula	Central		
	Industrial	1931-32	8,000,000
Cement, Chernaya Rechka	Siberia	1931-32	8,000,000
Cement, Ryazan	Central		
	Industrial	1932-33	7,200,000
Novoschury cement works, Ryazan district	Central		
	Industrial	1930-31	6,500,000
Cement, Amvrocyevka	Ukraine	1930-31	5,800,000
Refractory materials, Borovichi....	Leningrad	1931-32	5,500,000
Portland cement	Ukraine	1930-31	5,400,000

Rubber Industry

Tire, Yaroslavl	Central		
	Industrial	1930-31	34,000,000
Weaving mill of the Rubber Trust, Moscow district	Central		
	Industrial	1931-32	6,000,000

Glass China and Porcelain Industry

Glass, Nizhni Novgorod	Central		
	Industrial	1932-33	35,000,000
Glass, Lisichansk	Ukraine	1932-33	24,000,000
Glass, Ryazan or Tver	Central		
	Industrial	1932-33	18,000,000
China and porcelain, Voronezh dis- trict	Central		
	Black Soil	1932-33	14,200,000
Glass, Gus-Khrustalny	Central		
	Industrial	1929-30	14,000,000
Glass, Cheliabinsk	Ural	1931-32	12,000,000
Glass, Bely Bichok	Leningrad	1929-30	10,000,000
Porcelain, Nizhni Novgorod	Central		
	Industrial	1931-32	6,000,000
Glass	Siberia	1931-32	6,000,000
Glass, Gomel	White Russia	1931-32	5,600,000

Lumber Industry

Sawmill, Stalingrad, Beketovka....	Lower Volga	1932-33	26,080,000
2 sawmills, Archangel	Northern	1933-34	21,600,000
Sawmill, Archangel	Northern	1930-31	10,800,000
Sawmills, Mezen	Northern	1929-30	5,800,000
Sawmill, on River Bzidy.....	Transcaucasia	1930-31	5,700,000

Textile Industry

Cotton yarn mill	Uzbekistan	1932-33	75,000,000
8 knitting	Central		
	Industrial	1932-33	43,015,000
2 cotton, Fergana, Stalinabad.....	Uzbekistan	1932-33	41,700,000
Melange textile combine, first in- stallations, Ivanovo-Voznesensk..	Central		
	Industrial	1929-30	40,000,000
4 flax spinning and weaving, Yaro- slavl, Kostroma, Ivanovo-Vozne- senski, Tver	Central		
	Industrial	1933-34	31,450,000

TABLE X-A

**PRINCIPAL INDUSTRIAL PLANTS UNDER CONSTRUCTION
OR TO BE STARTED IN 1929-30—Cont'd**

Type of Plant	Region	Scheduled Date of Completion	Estimated Cost, at 1926-27 Prices
Woolen, Moscow district	Central		
Wool combine, Moscow district....	Industrial	1929-30	21,000,000
Textile, Ashkabad	Industrial	1932-33	20,000,000
Woolen, Leningrad	Turkmenistan	1931-32	19,300,000
Cotton	Leningrad	1931-32	16,800,000
Cotton spinning and weaving, Tver	Turkmenistan	1932-33	15,500,000
Knitting and weaving, Gandzha...	Central		
Silk winding	Industrial	1931-32	14,500,000
Knitting, Leningrad	Transcaucasia	1929-30	12,943,000
Spinning mill of Moscow Knitting	Uzbekistan	1932-33	12,900,000
Trust, Moscow district	Leningrad	1929-30	12,700,000
Spinning mill of Vigogne Melange	Central		
Trust, Moscow district	Industrial	1929-30	12,000,000
2 cotton spinning, Dubrovno and	Industrial	1929-30	11,500,000
Vitebsk	Industrial	1929-30	11,500,000
Spinning mill of Vladimir Textile	White Russia	1932-33	11,000,000
Trust, Vladimir district.....	Central		
"Krasnaya Talka" spinning mill,	Industrial	1929-30	10,800,000
Ivanovo-Voznesensk	Central		
Flax combine, Orsha	Industrial	1929-30	10,000,000
Combing and spinning, Glukhovo..	Transcaucasia	1930-31	9,440,000
Wool combine, Moscow district....	White Russia		
Flax combine, Pskov	Central		
Wool combing, Nevinnomisskaya...	Industrial	1929-30	9,400,000
First spinning mill, Leninakan...	Industrial	1929-30	9,000,000
Woolen, Sempalatinsk	Leningrad	1930-31	9,000,000
Dyeing, Vladimir	No. Caucasus	1931-32	8,000,000
Flax spinning and weaving, Kotel-	Transcaucasia	1928-29	7,280,000
nich	Kazakstan	1931-32	7,000,000
Spinning and carding, Moscow dis-	Central		
trict	Industrial	1929-30	6,900,000
Felt, Kazan	Industrial	1929-30	9,000,000
Second spinning mill, Leninakan..	Leningrad	1930-31	9,000,000
Weaving, Leninakan	Tartar Republic	1929-30	6,500,000
Wool, Tiflis	Transcaucasia	1931-32	6,600,000
Print cloth, Moscow district.....	Transcaucasia	1931-32	6,250,000
Woolen, Novosibirsk	Transcaucasia	1932-33	6,058,000
Knit goods, Vitebsk	Transcaucasia	1929-30	5,791,000
	Central		
	Industrial	1931-32	5,000,000
	Siberia	1931-32	5,000,000
	White Russia	1930-31	5,000,000

Shoe and Leather Industry

Leather, Ostashkov	Central		
Sole leather, Viatka	Industrial	1928-29	5,700,000
	Viatka	1930-31	5,500,000

Paper Industry

Volga cellulose and paper combine,	Central		
Nizhni Novgorod district.....	Industrial	1930-31	40,000,000
Cellulose and paper, Syas.....	Leningrad	1930-31	35,000,000
Cellulose, Archangel	Northern	1931-32	30,000,000
Cellulose and paper, Kotlas	Northern	1932-33	30,000,000

TABLE X-A

**PRINCIPAL INDUSTRIAL PLANTS UNDER CONSTRUCTION
OR TO BE STARTED IN 1929-30—*Cont'd***

Type of Plant	Region	Scheduled Date of Completion	Estimated Cost, at 1926-27 Prices
Cellulose and paper, Kondopoga...	Karelia	1931-32	14,400,000
Cellulose and paper, Urals.....	Ural	1931-32	12,300,000
Cellulose and paper, on Ingur....	Transcaucasia	1931-32	11,000,000
Paper and cellulose	Far Eastern	1934-35	9,000,000
Cellulose and paper, Ust-Abakansk	Siberia	1931-32	8,000,000
Cellulose and paper, Bobruisk.....	White Russia	1932-33	7,250,000
Balakhna cardboard mill, Nizhni	Central		
Novgorod district	Industrial	1929-30	6,700,000
Bobruisk wood working combine...	White Russia	1930-31	6,000,000
<i>Food Industry</i>			
Starch and molasses, Beslan.....	No. Caucasus	1930-31	7,500,000
<i>Sugar Industry</i>			
Sugar refinery, Pervomaisk	Ukraine	1930-31	9,900,000
Sugar refinery, Drabovo	Ukraine	1930-31	8,650,000
Sugar refinery, Kubansk	No. Caucasus	1929-30	7,600,000
Sugar refinery, Aleisk	Siberia	1929-30	6,000,000
Sugar refinery	Kirghiz	1929-30	5,600,000
Sugar refinery, Station Ertil	Central		
	Black Soil	1930-31	5,600,000
Sugar refinery, Toloscha	Central		
	Black Soil	1930-31	5,100,000
Sugar refinery, Gory	Transcaucasia	1931-32	5,000,000

TABLE X-B

POWER PLANTS TO BE UNDER CONSTRUCTION DURING THE
FIVE-YEAR PERIOD, OCT. 1, 1928-SEPT. 30, 1933

Power Plant	Capacity on Dec. 1, 1928	Capacity of completed plants on Oct. 1, 1933	Additional capacity of installations to be under way but not completed during the five-year period
(in thousand kilowatts)			
LENINGRAD REGION			
Red October	20	108	...
Volkhov	60	60	...
Svir .....	..	80	...
New Leningrad .....	..	100	200
4 Leningrad municipal power plants	94.5	140	10
Steam and power plant, Lenin- grad .....	..	100	...
TOTAL	174.5	588	210
CENTRAL INDUSTRIAL REGION			
Shatura	92	136	...
Kashira	12	284	...
New Moscow .....	...	...	150
2 Moscow municipal power plants	114	200	...
Classon power plant	36	46	...
Central power and steam plant in Moscow .....	...	150	...
Balakhna	20	150	50
Ivanovo-Voznesensk .....	...	90	...
New power plant of Central Industrial Region .....	...	120	80
Liapin (Yaroslavl)	8	41	...
TOTAL	282	1,217	280
CENTRAL AND LOWER VOLGA REGIONS			
Saratov .....	..	22	11
Stalingrad .....	..	66	..
Kashpura .....	..	..	..
Sviazh .....	..	..	..
New Volga .....	..	50	..
TOTAL .....	..	138	11

TABLE X-B—Continued

Power Plant	Capacity on Dec. 1, 1928	Capacity of completed plants on Oct. 1, 1933	Additional capacity of installations to be under way but not completed during the five-year period
(in thousand kilowatts)			
URAL REGION			
Kizelov	6	110	...
Cheliabinsk	134	...
Chusov
Power plant at junction of Kama and Pechora rivers	150
Yegorshin
New power plants in Central Urals	44	...
TOTAL	6	288	150
SIBERIAN REGION			
Kuznetz	100	200
Altai	60
Kemerovo	50	150
TOTAL	150	410
CENTRAL ASIA			
Fergana steam and power plant	..	30	..
Turkestan	70
Kadiryä	13.5	..
TOTAL	43.5	70
NORTHERN CAUCASUS			
Grozny	10	21	...
Krasnodar	22	...
Novorossisk	22	22
Shakhtinsk	66	...
Nesvetai	44	...
Gizel-Don	22.5	...
Mineralnye Vody (Baksan).....	..	25	...
Achaluki	15
Sulak	110
TOTAL	10	222.5	147

TABLE X-B—Continued

Power Plant	Capacity on Dec. 1, 1928	Capacity of completed plants on Oct. 1, 1933	Additional capacity of installations to be under way but not completed during the five-year period
(in thousand kilowatts)			
UKRAINE			
Chuguev .....	..	66	22
Shterovka	20	152	...
Lisichansk .....	..	...	...
New power plants in Donetsk Basin .....	..	100	100
Grishino .....	..	...	...
Dnieper .....	..	372	196
Kiev .....	..	44	...
Boog .....	..	...	20
TOTAL	20	734	338
WESTERN REGION			
Briansk .....	..	44	..
TOTAL .....	..	44	..
WHITE RUSSIAN REPUBLIC			
Osinovo .....	..	33	..
Gomel .....	..	22	..
TOTAL .....	..	55	..
TRANSCAUCASIAN REGION			
Zemo-Avchalsk	15	15	..
Rion .....	..	42	..
Dzoraget .....	..	19.2	..
Azerbaidzhan hydro-electric plant .....	..	30.5	..
Georgian plant .....	..	...	60
Kanakir .....	..	...	16
Baku power plant	100	120	20
TOTAL	115	226.7	96
GRAND TOTAL	607.5	3,706.7	1,712

TABLE XI

ANNUAL DEVELOPMENTS UNDER THE FIVE-YEAR PLAN

	Amounts in Millions of Rubles						Ratio of Each Year to Preceding Year, Per Cent					Ratio of 1932-33 to 1927-28	
	1927-28	1928-29	1929-30	1930-31	1931-32	For 5 Years							
							1927-28	1928-29	1929-30	1930-31	1931-32		
I. Gross production of industry, at 1926-27 prices.....	18,312	21,164	25,009	29,643	35,584	43,196	154,596	115.6	118.2	118.5	120.0	121.4	236.0
Of which, industries covered by plan of the Supreme Council of National Economy.....	10,909	13,247	16,090	19,649	24,320	30,447	103,753	121.4	121.5	122.1	123.8	125.2	279.0
II. Gross production of agriculture, at 1926-27 prices.....	16,659	17,367	18,845	20,804	22,897	25,806	105,719	104.2	108.5	110.4	110.1	112.7	155.0
Of which, agriculture proper.....	14,526	15,038	16,304	18,054	19,935	22,630	91,961	103.5	108.4	110.7	110.4	113.5	155.8
III. National income (net production):													
(a) At 1926-27 prices.....	24,429	27,149	31,289	36,294	42,154	49,690	186,576	111.1	115.2	116.0	116.1	117.9	203.4
(b) At prices of respective years..	24,681	27,385	30,884	34,829	38,749	43,270	175,117	111.0	112.8	112.8	111.3	111.7	175.3
IV. Capital investments (at prices of re- spective years).....	8,052	10,192	13,080	16,061	18,354	20,717	78,404	126.6	128.3	122.8	114.3	112.9	257.3
Of which:													
(a) Basic capital.....	7,112	8,612	10,836	13,115	14,896	17,142	64,601	121.1	125.8	121.0	113.6	115.1	241.0

TABLE XI.—Continued

Including:													
1. Industry (including industrial housing).....	1,672	2,091	2,845	3,451	3,796	4,170	16,353	125.1	136.1	121.3	110.0	109.9	249.4
Of which, industries regulated by the Supreme Council of National Economy.....	1,318	1,659	2,331	2,880	3,165	3,465	13,500	125.9	140.5	123.6	109.9	109.5	262.9
2. Electrification not including factory power plants.....	284	332	453	656	757	861	3,059	116.9	136.4	144.8	115.4	113.7	303.2
3. Agriculture.....	3,084	3,664	4,173	4,720	5,079	5,516	23,152	118.8	113.9	113.1	107.6	108.6	178.8
4. Transportation.....	896	1,128	1,497	1,878	2,394	3,105	10,002	125.9	132.7	125.5	127.5	120.7	346.5
(b) Operating capital.....	940	1,580	2,244	2,946	3,458	3,575	13,803	168.1	142.0	131.3	117.4	103.4	380.3
V. Government budget, central and local, net expenditures.....	5,879	7,123	8,633	10,120	11,850	13,669	51,355	121.3	121.2	117.2	116.7	115.7	232.5
Of which:													
(a) General administration and defense.....	1,751	1,878	1,991	2,195	2,466	2,716	11,186	107.1	106.0	110.2	109.6	112.9	155.1
(b) Social welfare and cultural activities.....	1,238	1,450	1,769	2,167	2,566	2,994	10,946	117.1	122.0	122.5	118.4	116.7	241.8
(c) Financing of national economy.....	2,424	3,284	4,204	5,058	6,081	6,981	25,068	136.0	128.0	120.3	120.2	114.8	288.0
(d) All other.....	464	511	669	700	757	978	3,615	110.1	130.9	100.6	108.1	1139.2	209.9

APPENDIX 2

TABLE XII

CULTURAL AND HEALTH DEVELOPMENT, 1927-28 TO 1929-30

I. Education—

A. Schools, number of students—

	1927-28	1928-29	1929-30 Program
In general schools—			
Elementary schools (4 years).....	9,748,000	10,138,000	11,790,000
Secondary schools	1,513,000	1,614,000	1,793,000
In adult schools—			
Workers' faculties	49,000	57,000	60,000
Schools for liquidating illiteracy	1,322,000	2,700,000	7,500,000
In professional and technical schools—			
General technical and higher schools for adults ...	41,000	48,000	468,000
Special schools for peasants .....	.....	.....	140,000
Factory schools	95,000	100,000	132,000
Schools for peasant youth	88,000	127,000	175,000
Technical institutes	160,000	181,000	231,000
Colleges and universities	189,000	194,000	231,000
Industrial and transportation	55,000	60,000	77,000

B. General indexes of cultural development—

Clubs, number of	6,300	6,500	6,800
Reading rooms in villages, number of	21,800	22,200	25,500
Consumption of paper by press, in metric tons	120,000	145,000	214,000
Newspapers (annual circulation in thousand printed sheets)	1,698,000	2,500,000	4,000,000
Books and magazines, in thousand signatures (16 printed pages each)	1,850,000	2,400,000	3,370,000
Radios, receiving units	348,000	671,000	2,600,000
Moving picture installations	8,350	12,040	23,040
In commercial theaters	1,140	1,200	1,260
In clubs	3,450	3,880	4,460
In villages, permanent	1,520	2,420	3,960
In villages, traveling	2,230	4,340	11,080
In schools	10	200	2,280
II. Health Service—			
Total number of hospital beds	253,200	266,400	286,700
Number of nurseries	1,160	1,350	1,610
Total number of medical personnel	355,400	376,800	401,000

APPENDIX 3
FOREIGN TRADE
TABLE XIII
SOVIET FOREIGN TRADE IN 1927-28 AND 1928-29

A. IMPORTS		(in rubles)	Per cent	
		1928-29	1927-28	change
1. Imports of Producers' Goods—				
a. Industrial and transportation equipment..				
	210,291,000	255,825,000	— 17.8	
Industry	171,421,000	218,013,000	— 21.4	
Transportation	38,870,000	37,812,000	+ 2.8	
b. Raw materials				
	345,015,000	383,618,000	— 10.1	
Cotton	131,796,000	154,215,000	— 10.6	
Wool	69,309,000	62,052,000	+ 11.7	
Iron and steel	29,364,000	16,759,000	+ 75.2	
Non-ferrous metals ...	46,670,000	57,703,000	— 19.1	
Hides and skins	30,947,000	40,080,000	— 22.8	
Crude rubber	9,587,000	24,097,000	— 60.2	
Miscellaneous	27,342,000	28,712,000	— 4.8	
c. Semi-manufactured products				
	97,682,000	117,099,000	— 16.6	
Leather	8,533,000	7,274,000	+ 17.3	
Paper and cardboard..	10,990,000	14,590,000	— 24.7	
Tanning materials	8,243,000	15,720,000	— 47.6	
Paints and dyes	5,739,000	11,740,000	— 51.1	
Miscellaneous	64,177,000	67,775,000	— 5.3	
d. Fuel				
	463,000	622,000	— 25.6	
e. Agricultural machinery and supplies				
	66,454,000	38,980,000	+ 70.5	
Agricultural machinery, implements and tractors	43,478,000	21,765,000	+ 99.8	
Miscellaneous	22,976,000	17,215,000	+ 33.5	
Total producers' goods ..	719,905,000	796,144,000	— 9.6	
2. Imports of Consumers' Goods—				
a. Food products				
	78,939,000	114,972,000	— 31.3	
Dried fruit	10,056,000	9,138,000	+ 10.0	
Rice	13,139,000	15,494,000	— 15.2	
Tea	29,399,000	36,788,000	— 20.1	
Herrings	2,514,000	2,496,000	+ 0.7	
Oranges and lemons..	4,461,000	3,486,000	+ 28.0	
Sugar	3,886,000	576,000	+ 574.7	
Miscellaneous	15,484,000	46,994,000	— 67.1	
b. Industrial products of general consumption..				
	28,132,000	28,014,000	+ 0.4	
Total consumers' goods .	107,071,000	142,986,000	— 13.1	
3. Miscellaneous	2,927,000	5,575,000	— 47.4	
Grand total	829,903,000*	944,705,000	— 12.2	

* Revised total for imports for 1928-29 is 837,000,000 rubles.

TABLE XIII—*Continued*

	EXPORTS		Per cent change
	(in rubles) 1928-29	1927-28	
1. Industrial Exports—			
Lumber	137,154,000	93,907,000	+ 46.1
Oil products	132,614,000	107,020,000	+ 23.9
Manganese ore	19,059,000	13,752,000	+ 28.6
Iron ore	5,617,000	4,527,000	+ 24.1
Asbestos	4,587,000	3,209,000	+ 42.9
Coal	9,953,000	4,420,000	+125.2
Cotton cloth	47,589,000	49,761,000	— 4.4
Miscellaneous	150,137,000	118,038,000	+ 27.2
Total industrial exports ...	506,710,000	394,634,000	+ 28.4
2. Agricultural Exports—			
Grain products	43,062,000	56,556,000	— 23.9
Grain	18,878,000	38,942,000	— 51.5
Oil seed cake	20,300,000	16,918,000	— 20.0
Seeds	3,884,000	696,000	+458.0
Butter	33,713,000	39,158,000	— 13.9
Eggs	27,763,000	40,464,000	— 31.4
Dressed poultry and game..	11,718,000	11,380,000	+ 3.0
Fish products	14,211,000	12,978,000	+ 9.5
Meat products	18,652,000	16,092,000	+ 15.9
Flax and tow	28,989,000	21,278,000	+ 36.2
Hemp and tow	3,834,000	3,352,000	+ 14.4
Bristles	6,595,000	6,590,000	+ 0.1
Casings	15,123,000	10,659,000	+ 41.9
Furs	109,119,000	119,323,000	— 8.6
Miscellaneous	58,248,000	45,385,000	+ 28.3
Total agricultural exports..	371,027,000	383,215,000	— 3.2
Total agricultural exports, excluding grain products.	327,965,000	326,659,000	+ 0.4
Grand total.....	877,737,000*	777,849,000	+ 12.8

* Revised total for exports for 1928-29 is 890,000,000 rubles.

TABLE XIV

SOVIET-AMERICAN TRADE TURNOVER, 1923-24 TO 1928-29 (PURCHASES
OF AMERICAN PRODUCTS AND REPORTED DELIVERIES OF
SOVIET PRODUCTS IN THIS COUNTRY)
(in thousand dollars)

	1923-	1924-	1925-	1926-	1927-	1928-	1923-24 to
Organization	1924	1925	1926	1927	1928	1929	1928-29
Amtorg	5,728	47,530	20,344	35,814	45,439	89,937	244,792
Textile							
Syndicate.	39,201	44,401	31,542	42,710	52,550	31,763	242,167
Centrosoyus.	4,442	4,811	3,781	3,902	3,707	4,678	25,321
Selskosojus..	38	854	2,580	2,316	5,104	2,561	13,453
Amkino ...	.....	.....	.....	34	46	80	160
Concession-							
aries	1,352	4,750	6,461	3,507	3,567	6,234	25,871
Other .....	.....	.....	8,000	4,500	3,126	3,147	18,773
Total	50,761	102,346	72,708	92,783	113,539	138,400*	570,537

The above figures are grouped by purchases and sales as follows:

Year	Purchases	SALES (Deliveries)	Total
1923-24	43,916	6,845	50,761
1924-25	86,938	15,408	102,346
1925-26	48,560	24,148	72,708
1926-27	71,689	21,094	92,783
1927-28	91,232	22,307	113,539
1928-29	107,651	30,749*	138,400
		(approx.)	
Total	449,986	120,551	570,537†

* Known sales of Soviet products in the United States made up at least an additional \$10,000,000. Considerable quantities of Soviet products (largely furs) are also shipped to the United States by way of Germany and other European countries by European and American buyers.

† Soviet business with America during the first quarter of 1929-30 (October-December, 1929) increased the total Soviet-American trade turnover during the past six years to well over \$600,000,000.

TABLE XV

SALES OF SOVIET PRODUCTS IN THE UNITED STATES,
1927-28 AND 1928-29 *

	1928-29	1927-28
1. Products of the soil	\$2,311,265	\$2,684,952
Seeds	244,343	323,256
Crude drugs	753,929	671,588
Flax, hemp and tow	827,813	1,433,810
Mushrooms	479,012	246,282
Miscellaneous	6,168	10,016
2. Animal products	3,933,550	3,972,761
Bristles	897,296	1,066,262
Casings	2,675,595	2,638,313
Poultry and game	257,403	82,481
Hides and skins	51,618	24,250
Miscellaneous (including horse hair, wool, butter, etc.)	51,638	161,455
3. Furs and fish products	10,172,774	8,905,817
Furs	8,299,215	7,162,693
Fish products	1,873,559	1,743,124
4. Lumber and products of de- structive wood distillation	1,415,483	359,140
5. Mining products	11,179,684	6,032,371
Precious metals	3,617,464	2,549,115
Manganese	6,050,839	3,483,256
Miscellaneous (including coal, etc.)	1,511,381	.....
6. Other industrial products	1,736,288	351,488
Rugs	53,880	19,913
Art and handicraft products....	72,088	17,018
Rags	657,499	120,292
Glycerine	76,512	.....
Miscellaneous (including matches, candy, motion picture films, etc.)	876,309	194,265
Grand total	\$30,749,044	\$22,306,529

* Reported deliveries of Soviet products in the United States.

TABLE XVI

ORDERS PLACED IN THE UNITED STATES BY THE AMTORG
TRADING CORPORATION, THE ALL-RUSSIAN TEXTILE
SYNDICATE, CENTROSOYUS AND SELSKOSOJUS,
IN 1927-28 AND 1928-29

	1928-29 (in dollars)	1927-28	Per Cent Change
1. Raw Materials—			
Cotton	31,161,382	51,480,312	— 39.47
Crude rubber	445,575	2,152,578	— 79.30
Non-ferrous metals	4,338,557	3,803,883	+ 14.00
Minerals .....	.....	557	.....
Iron and steel....	153,681	.....	.....
Diamonds and car- bonates	2,925	.....	.....
Special wood .....	.....	745	.....
Woolen rags .....	.....	552,438	.....
Total	36,102,120	57,990,513	— 37.75
2. Semi-manufactured Products—			
Rosin	1,011,844	603,954	+ 67.53
White tinplate....	668,635	326,238	+ 105.00
Chemical products	80,215	179,208	— 55.20
Abrasives	13,846	110,325	— 87.50
Wire	173,434	80,111	+ 116.50
Leather .....	.....	70,998	.....
Carbon black	43,895	.....	.....
Wood for pencils..	.....	56,450	.....
Rope .....	.....	18,174	.....
Paper	244,881	.....	.....
Special steel .....	.....	12,970	.....
Mica .....	.....	10,428	.....
Paints and dyes...	29,080	.....	.....
Miscellaneous	424,308	22,542	+ 1795.27
Total	2,690,138	1,491,398	+ 80.57

TABLE XVI—*Continued*

	1928-29	1927-28	Per Cent
	(in dollars)		Change
3. Industrial Equipment—			
Mining	1,392,186	2,221,083	— 31.32
Construction	1,574,777	1,557,066	+ 1.14
Oil	9,823,799	1,262,826	+ 677.92
Electrotechnical ..	194,603	1,238,763	— 84.90
Metal	4,248,766	1,223,477	+ 247.27
Canning and food.	496,208	537,236	— 7.64
Paper	148,413	419,470	— 64.62
Laboratory	460,221	378,786	+ 21.50
Refrigerator	368,020	439,663	— 16.30
Silicate	28,304	.....	.....
Chemical	975,672	149,598	+ 552.20
Precision ma-			
chinery .....	.....	121,064	.....
Shoe and leather.	30,959	69,899	— 55.71
Slaughter house ..	.....	21,044	.....
Post, telegraph and			
telephone	259,750	43,334	+ 499.41
Printing	631	3,340	— 81.10
Ship and marine			
equipment	1,416,107	576,333	+ 145.70
Watch and clock			
factory	580,000	.....	.....
Metallurgical	1,262,551	.....	.....
Clothing factory...	141,062	181,601	— 22.33
Foundry equip-			
ment	168,355	.....	.....
Municipal	48,231	.....	.....
Auto and tractor			
plant	5,748,148	.....	.....
Textile	601,130	603,258	— 0.33
Miscellaneous	369,244	347,782	— 20.24
Total	30,337,137	11,395,623	+ 166.22
4. Power Plant			
Equipment ...	3,716,924	814,223	+ 356.50
5. Automotive Equipment—			
Aviation equipment	705,867	1,015,232	— 30.48
Passenger cars and			
parts	2,452,761	796,704	+ 207.86
Trucks	2,012,581	652,518	+ 208.43
Motorcycles	103,658	200,624	— 48.34
Motor boats .....	.....	111,028	.....
Autocars .....	.....	25,309	.....
Bicycles	257	880	— 70.83
Total	5,275,124	2,802,295	+ 88.24

TABLE XVI—*Continued*

	1928-29 (in dollars)	1927-28	Per Cent Change
6. Agricultural Machinery and Supplies—			
Tractors and parts	20,175,586	11,116,738	+ 81.49
Other agricultural machinery and parts	7,092,043	1,895,416	+ 274.17
Equipment for re- pair shops	343,997	231,823	+ 48.39
Equipment for working up agri- cultural products	113,172	.....	.....
Binder twine	452,876	1,259,569	— 64.05
Foxes	27,925	.....	.....
Live stock	4,743	298,628	— 98.41
Miscellaneous	66,410	396,983	— 83.27
Total	28,276,752	15,199,157	+ 86.04
7. Consumers' Goods—			
Typewriters, add- ing machines, etc.	798,195	595,126	+ 28.07
Miscellaneous	134,430	546,387	— 75.40
Total	932,625	1,141,513	— 18.30
8. Miscellaneous ...	320,295	396,325	— 19.19
Grand Total	107,651,115	91,231,048	+ 18.00

DISTRIBUTION BY PURCHASERS

Amtorg Trading Corp.	72,229,945	33,145,798	+ 117.91
All-Russian Textile Syndicate	31,762,512	52,550,135	— 39.56
Centrosoyus	956,809	502,800	+ 90.30
Selskosojus	2,518,487	4,948,598	— 49.11
Others	183,362	83,717	+ 119.03
Total	107,651,115	91,231,048	+ 18.00

TABLE XVII

ORDERS PLACED IN THE UNITED STATES BY THE AMTORG, THE
TEXTILE SYNDICATE, CENTROSOYUS AND SELSKOSYUS,
BY STATES, IN 1928-29

<i>State</i>	<i>1928-29</i>
Alabama	\$ 1,979,000
California	7,459,000
Colorado	80,000
Connecticut	1,235,000
Delaware	25,000
District of Columbia.....	189,000
Georgia	373,000
Illinois	17,711,000
Indiana	3,137,000
Iowa	110,000
Kansas	2,620,000
Kentucky	55,000
Louisiana	644,000
Maryland	69,000
Massachusetts	2,689,000
Michigan	5,314,000
Minnesota	68,000
Missouri	1,218,000
New Hampshire	37,000
New Jersey	1,823,000
New York	17,345,000
North Carolina	74,000
Ohio	7,787,000
Oregon	30,000
Pennsylvania	6,002,000
Rhode Island	287,000
Tennessee	165,000
Texas	24,358,000
Vermont	137,000
Virginia	148,000
Washington	255,000
West Virginia	27,000
Wisconsin	1,770,000
Others	13,000
Total, United States	\$105,233,000
Canada	2,418,000
Grand Total	\$107,651,000

APPENDIX 4

CONCESSIONS AND TECHNICAL ASSISTANCE

A—TERMS OF FOREIGN CONCESSIONS

The general terms under which concessions are offered to foreign firms are as follows:

Concessions may be granted for the construction and operation of factories, mills and mines, for the building of houses and roads, and for the development of forest, mineral and other of the natural resources of the Union. The concessionaire may supply the entire capital necessary for the project or may enter into a "mixed" company in conjunction with a Soviet state organization or, in the case of technical advisers, may not be required to invest any capital at all.

Concessionaires engaged in production are usually permitted to dispose freely of their product on the Soviet market and also to export a certain specified proportion. In cases where the concession enterprise produces commodities for which there is a large demand in the U. S. S. R., the concession agreement usually contains a provision giving an option to Soviet organizations for a part or the whole of the output on conditions specified in the agreement.

The concessionaire is permitted to export from the country the entire net profit of the enterprise, the transfer of money to be effected through the State Bank of the U. S. S. R. or any other bank in the country. In certain instances where the concessionaire's investment is comparatively small the Government may require a provision limiting the export of profits during the first few years of the concession's operation.

The policy and the practice of the Soviet Government have been to especially favor concession enterprises which can obtain the needed raw materials and semi-manufactured products within the country. In the event, however, that the required materials are not available in the U. S. S. R., the concessionaire is granted the right to import such materials, the quantity and procedure of importing being specified in the concession agreement. In these cases imports are allowed until such time as the production of the required materials is begun in the country. Imports of equipment are usually exempt from customs duties for a specified length of time after the granting of the concession.

In regard to the payment of taxes and duties the concessionaire is placed in the same category as similar Soviet enterprises. Excess profits are usually taxed according to a scale specified in the agreement.

One of the principal provisions of concession agreements is that the enterprise employ the most modern production methods.

The life of the concession, depending upon the nature of the industry and the amount of capital invested, is sufficiently long to allow the concessionaire to utilize fully the imported equipment and to receive an adequate return on the invested capital. Upon the expiration of the term of the concession, all the concession properties are turned over to the Government without compensation.

Concession agreements, upon ratification by the U. S. S. R., have the power of a special law. The provisions of such agreements cannot be changed by any decrees or rulings of central or local government organs.

In accordance with the existing laws the Government of the U. S. S. R. guarantees that the properties of the concessionaire invested in the enterprise are not subject to nationalization, requisition or confiscation. The concessionaire is allowed to hire the necessary working staff on the basis of the provisions of the Soviet Labor Code and of the collective agreements made with trade unions. The experience of a number of years shows that concessionaires have had no difficulties in hiring and employing labor in the U. S. S. R. The concessionaires are permitted, with certain limitations, to bring in foreign skilled workers and higher administrative and technical personnel. The proportion of foreign workers to the total number of workers is set forth in the agreement.

B—CONCESSION OPENINGS AVAILABLE IN THE SOVIET UNION

The following is a partial list of concession openings in the Soviet Union available for construction or operation or both. Construction of a number of these has already been begun by the government, in some cases with foreign technical assistance.

A. Metallurgical Industry

New enterprises available for concessions in the metallurgical industry include the following:

1. Steel mill in the Krivoy Rog district in the Ukraine, and working of iron ore deposits.
2. Steel mill in the Magnitogorsk district of the Urals, and working of iron ore deposits.
3. Steel mill in the Kuznetz district of Siberia; also construction of railways and exploitation of ore deposits.
4. Metallurgical plant near the Dneprostroy hydro-electric station in the Ukraine, to produce ferro-alloys.

Among concessions for re-equipping and expanding existing plants are included the following steel mills:

1. The Kadiiev mill in the Urals.
2. The Providence mill in the Ukraine.
3. The Taganrog mill in the Ukraine.

B. Machine-Building Industry

Among concession openings in this industry are the following:

1. A factory for the manufacture of machine tools, to be

built either in the central or southern part of the Soviet Union.

2. A factory at Moscow to produce precision instruments and special steels.
3. A railway freight car works, at Nizhni Tagil in the Urals.
4. A factory for the building of aeroplane motors in the Urals.
5. An agricultural machinery factory to produce seeders and threshers, at Votkinsk in the Urals.
6. A yard for the construction of river boats, at Sarepta on the Volga River.
7. Factories to produce steam boilers and iron for boilers, etc., at Stalingrad.
8. A factory to manufacture typewriters and adding machines, at Moscow or Leningrad.
9. Factories in the Ukraine, the Moscow region, the Urals, etc., to produce printing presses, precision instruments, equipment for power stations, surgical and dental instruments, abrasives, sugar and distilling equipment, construction materials, bicycles, woodworking machinery, conveyors, canning and candlemaking equipment.

C. Extraction of Ores and Fuels

1. Concessions for working iron ore deposits in the Krivoy Rog region of the Ukraine; at Dashkessan, in Transcaucasia; near the Gulf of Possiett, to the south of Vladivostok; in other parts of the Far Eastern Region; at Komarov and other sections in the Urals.
2. Copper ore deposits in the Caucasus; at Tanalyk-Baimak, in the Urals; at Minusinsk, in Siberia; at Bayan-Aoul, in Kazakstan, etc.
3. Lead and zinc ore deposits near Lake Balkash in Western Siberia; at Nerchinsk and Kadainsk, in Eastern Siberia; at Kar-Karalinsk, in Kazakstan; and in various localities near the Sea of Japan.
4. Gold deposits at Berezovsk and Sverdlovsk, in the Urals; along the Uda River, in the Far Eastern region; in the Okhotsk district; along the Vilui River, in the Yakutsk Republic; and in various other regions of Siberia.
5. Coal deposits near the Tom River in the Kuznetz Basin, in Siberia; at Tkvartcheli on the Galizga River, in the Abkhaz region of Transcaucasia.
6. Oil deposits in the Dossor and Macat fields, in the Ural-Emba section; on the island of Cheleken, in the Caspian Sea, including construction of a railroad from Alexandrov-Gai to Chardzhui; oil deposits of Temruk-Tanan and of Shirak-Chatma, in Georgia; deposits of the Kerch Peninsula, in the Crimea; and of the Nefte-Dag and other oil fields, in Central Asia.
7. Graphite deposits near the Kureika River, in the Turukhansk section of Northern Siberia.
8. Nickel deposits in the Sergievo-Ufalei district.
9. Asbestos deposits at Karachai and at Ilchersk.

D. Central (Regional) Power Stations

1. Hydro-electric station on the Svir River, 230 kilometers

- from Leningrad; may include high-tension transmission lines to Leningrad.
2. Central electric station at Cheliabinsk, to use coal deposits of the district.
 3. Rion hydro-electric station, near Kutais, in Georgia; to supply current for the Transcaucasian Railway, Chiaturi manganese mines and other industries in the region will be important consumers.
 4. Hydro-electric station on the White River, near Maikop in the Caucasus; principal consumers will be the coal industry, dairy industry, etc.
 5. Hydro-electric station at Baksan, in the Kabard Autonomous Area in the Caucasus; may also include transmission line to Kislovodsk.
 6. Central station in the Moscow region, to use coal; enterprise may include coal mines, gas works, etc.
 7. Bryansk electric station, to use peat; may include transmission lines and sub-stations.
 8. Stalingrad central station, to use peat and coal.
 9. Central station on the Kara-Sakhal River in Azerbaidzhan; principal consumer will be city of Gandja.
 10. Electric stations, at Dnepropetrovsk, to use coal, and at Ossino, to use peat.

E. Various Industrial Enterprises

1. Manufacture of electrical apparatus—eight factories to produce motors, storage batteries, electric heaters, insulators, lighting apparatus, electro-medical apparatus and high-tension equipment.
2. Chemical industry—exploitation of the Solikamsk potash deposits.
3. Tanning factories, etc.—factory in the Tartar Republic, to produce kid leather; seven factories to produce tanning extracts, in the Kama region, near Vologda; in Viatka province; in Nizhni Novgorod province; in White Russia; in the Chuvash Republic; in the Baikal region; and in the Altai; tannery to be constructed at Voronezh, also electric station for the plant.
4. Cement industry—five factories, of which three will be constructed in Central Asia, one in White Russia, and one in the Far East.
5. Paper industry—construction of cellulose plant at Archangel, to work in combination with saw mills now operating in the region; cellulose and wood pulp factory and saw mill in the Vytechgodsk region; a similar enterprise in the Mezen River region.
6. Glass industry—construction of glass factory at Kemerovo, Kuznetz Basin of Siberia, to produce bottles and window glass; construction of a similar plant at Verkhneudinsk in the Buriat-Mongol Republic; factory to produce window glass at Nizhni Novgorod; factory, in the Lisichansk region of the Donetz Basin, to manufacture window glass and glass for chemical and technical purposes; factory at Moscow, to produce glass for industrial and chemical purposes.

F. Transportation

1. Construction of the Obi-White Sea Railroad, with branches to the Nadejdinsk steel plant in the Urals, and to Ust-Tsilma, length about 2,000 kilometers; concession may include exploitation of forests in the eastern Urals, the Obi and Irtish regions, and the Ukhta petroleum deposits.
2. Construction of a railway from Alexandrov-Gai to Chardzhui, length about 1,680 kilometers; may include exploitation of Emba oil fields and cotton cultivation in the region.
3. Construction of railway from Saratov to Millerovo or to Gratchi, length 500 kilometers; concession includes construction of bridge over the Volga River at Saratov.
4. Railroad to connect Orsk-Akmolinsk-Pavlograd-Kulunda-Kuznetz, in Central Siberia, length 2,000 kilometers.
5. Electric railway, 185 kilometers in length, over the Caucasus Mountains.
6. A number of waterway projects may also be given out on a concession basis, including construction of the Volga-Don Canal and construction of sluices on the Svir River.

G. Forest Concessions

1. Exploitation of 550,000 hectares of forest area in the Mezen River basin in Archangel province; annual production of this region could be set at 583,000 cubic meters.
2. Exploitation of the Udar forests in the Komi territory; total area, 180,000 hectares; estimated annual production, 175,000 cubic meters.
3. Forest territory of the Pechora region; estimated annual production, 185,000 cubic meters.
4. Exploitation of the forests of the Iyevsk region, near the Komi River; estimated annual production, 97,000 cubic meters.
5. Exploitation of the forest regions in the White Sea district, with an aggregate area of 2,800,000 hectares.
6. Exploitation of ten large forest areas in the Far Eastern region, two areas in the Amur region and a number of areas in Transcaucasia.

H. Irrigation and Reclamation Projects

1. Irrigation of the Chu and of the Chu-Issukol regions in Kazakstan and the Kirghiz Republic; area covered about 260,000 hectares; concessions would be granted for 30 to 40 years; may include cultivation of grain, cotton, sugar beet and fruit areas.
2. Other irrigation projects in Kazakstan, in the Ural-Emba region, in the North Caucasus, the Lower Volga and the Abakan Steppe in Siberia; these concessions may include construction of railways and power plants, and cultivation of various crops.
3. Draining of the swamps of Poti and Abkhaz in Transcaucasia; concession may include the construction of factories for working up of agricultural products; area covered, about 80,000 hectares; concession to be granted for 30 years.

C—MUNICIPAL CONCESSION OPENINGS

There are about ninety public utility concession projects available in the Soviet Union, in such fields as the construction and operation of trolley lines, electric railways, power plants, water and gas works, sewage systems and slaughter houses.

1. Concessions to construct and operate trolley systems are listed in sixteen cities of over 50,000 population each. Among these are Novosibirsk (Siberia) with a population of 121,000; Ivanovo-Voznesensk, with 111,000; Samarkand (Central Asia), population, 102,000; Ufa, 96,000; Orenburg, 122,000, and Perm, 84,000 (all in the Urals); Novorossisk (in the North Caucasus) 66,000, and others.

2. Concessions for the construction of municipal electric power stations are available in nine cities, ranging from a plant of 30,000 kilowatts for Kiev (Ukraine), with a population of 500,000, to one of 1,000 kilowatts for Yalta (Crimea).

3. In twenty-one cities throughout the country, which have either an insufficient water supply or none at all, concessions may be granted. Among these are Samarkand, Chita (Siberia) with a population of 58,000, Tiflis (Georgia) 283,000, Tashkent (Central Asia) 313,000, Stalingrad (Lower Volga Region) 143,000, and Samara (Middle Volga Region) 72,000. These involve investments of from \$300,000 (Batum) to \$4,000,000 (Tashkent).

4. Moscow, which has a population of 2,500,000, is offering as a concession project the construction of a subway system from the heart of the city to a group of important railway depots. Two electric railways are offered for construction and operation on the Crimean and Caucasian shores of the Black Sea, 60 and 120 miles long, respectively.

5. Concessions for the construction of sewerage systems are available in twenty-one cities, and in fifteen cities openings for the construction of gas works. Concessions for both water supply and sewerage systems are available in half a dozen cities, including Vladivostok, Batum and Erivan. There are openings for the building of slaughter houses in Moscow, Leningrad, Ivanovo-Voznesensk, Baku and other cities.

NUMBER OF MUNICIPAL CONCESSION OPENINGS

	Number	Estimated Cost of Enterprises (in million rubles)
Municipal transport	19	119.5
Power stations	9	54.7
Water supply	21	51.8
Sewerage	21	66.2
Gas plants	15	91.1
Slaughter houses and auxiliaries.....	6	29.3
TOTAL	91	412.6

**D—TECHNICAL ASSISTANCE CONTRACTS CONCLUDED BY
SOVIET ORGANIZATIONS WITH AMERICAN FIRMS
AND ENGINEERS
(as of February, 1930)**

- Akron Rubber Reclaiming Company—Technical assistance to the Soviet Rubber Trust in the construction of a reclamation plant.
- Allen and Garcia Company—Technical assistance in the designing and opening of new coal mines for the Donugol Coal Trust.
- Austin Company—Technical assistance on construction of the Nizhni Novgorod automobile plant.
- Arthur J. Brandt—Reconstruction of the Amo (Moscow) automobile plant for the Avtotrest (Auto Trust).
- Brown Lipe Gear Company—Technical assistance to Avtotrest.
- Burrell-Mase Engineering Company—Rationalization and expansion of gas and gasoline industry for Grozneft (Grozny Oil Trust).
- Hugh L. Cooper and Company—Consulting engineers on the construction of the Dnieper River hydro-electric power plant in the Ukraine.
- Arthur P. Davis, Lyman Bishop and associates—Consulting engineers on the irrigation projects of the "Sredazvodkhoz" (Central Asiatic Water Economy).
- Frank E. Dickie—Technical assistance for Aluminstroy (Bureau for Construction of Aluminium Plants).
- Du Pont de Nemours and Company—Technical assistance in erecting fertilizer factories.
- Hardy S. Ferguson and Company—Technical assistance to Severoles (Northern Lumber Trust) for reconstruction of paper mill near Archangel.
- Ford Motor Company—Technical assistance in the construction and operation of the Nizhni Novgorod automobile factory.
- Frey Engineering Company—Consulting engineers for the Giprometz (State Institute for the Designing of Steel Mills) for plants to be reorganized or constructed in various parts of the country.
- Harry D. Gibbs—Technical assistance in the Soviet aniline industry.
- Goodman Manufacturing Company—Technical assistance in the construction of a factory to produce coal cutters.
- Hercules Motor Company—Assistance in the production of engines for trucks in the Amo automobile plant of the Avtotrest.
- John J. Higgins—Technical assistance to G. E. T. (State Electro-technical Trust).
- International General Electric Company—Technical assistance in the Soviet electrical industry and exchange of patents with the State Electro-technical Trust.
- Irving Air Chute Co., Inc.—Technical assistance in aviation industry.
- Albert Kahn, Inc.—Designing of buildings for the Stalingrad tractor factory; also contract to render general consultation services to Supreme Economic Council as architects on industrial construction.
- Lockwood Greene and Company—Technical assistance in the reorganization and reconstruction of existing textile mills and in the design and construction of new plants.
- McCormick Company—Designing of baking plants.

- McDonald Engineering Company—Construction of industrial plants.
- Mechanical Manufacturing Company—Technical assistance in the meat-packing industry.
- Newport News Shipbuilding and Drydock Company—Technical assistance in the construction of turbines.
- Nitrogen Engineering Company—Technical assistance in constructing and operating a large ammonia fertilizer factory.
- Oglebay, Norton Company—Technical assistance to Yurt (Southern Ore Trust).
- Radio Corporation of America—Exchange of patents and technical information with the Soviet Weak Current Trust.
- Roberts and Schaefer Company—Technical assistance to the Donetz Coal Trust.
- C. F. Seabrook Company—Technical advisors for road-building in the Moscow District.
- Seiberling Rubber Company—Designing and assistance in construction of a rubber tire plant at Yaroslavl, for Resinotrest (Soviet Rubber Trust).
- Sperry Gyroscope Company—Technical assistance in the manufacture of marine instruments.
- Timken-Detroit Axle Company—Technical assistance to Avtotrest.
- Westvac Chlorine Products, Inc.—Aid in production of chlorine for United Chemical Industries of U.S.S.R.
- J. G. White Engineering Company—Consulting services for Svir hydro-electric plant, near Leningrad.
- Norman L. Wimmeler—Technical assistance to Tsvetmetzoloto, in gold mining.
- W. A. Wood—Technical assistance to Tsvetmetzoloto (Non-ferrous Metals and Gold Combine) in non-ferrous metals manufacturing plants.

Aside from the above-mentioned technical assistance contracts with various firms, several other Soviet organizations engaged American engineers and specialists, foremen and skilled workers for work in the Soviet Union. Among these are the following:

John Calder—General superintendent of construction for Traktorstroy (Stalingrad tractor plant), and six foremen.

Leon S. Moisseiff—Consulting engineer for Commissariat for Transportation.

The Precision Machinery Trust engaged a technical director and twenty foremen and assistant foremen to work in the newly established watch and clock factories of the trust.

The Zernotrest (State Grain Trust) engaged twenty-three tractor instructors.

The Ako (Kamchatka Joint Stock Company) engaged three canning specialists for work in its canneries.

The Uralmet (Ural Metal Trust) engaged three iron mining engineers.

The Zakvodhoz (Transcaucasian Water Economy Service) engaged two irrigation engineers.

Among other organizations which have engaged American engineers and specialists are the Yugostal (Southern Steel Trust), the Tsvetmetzoloto (Non-ferrous Metals and Gold Combine), the Giprometz (State Institute for Designing Steel Mills), the Gipro-

tsvetmet (Institute for Designing Non-ferrous Metal Works), Polymetal Trust, Orgametal (Institute for the Organization of Metal Works), Giproschacht (State Institute for Designing Coal Mines), Avtotrest (State Automobile Trust), G. E. T. (State Electotechnical Trust), Dnieprostroy (Bureau for Construction of the Dnieper River Power Plant), Gosshveymashina (Sewing Machine Trust), Selmashstroy (Bureau for Construction of Agricultural Machinery Plants), Steklostroy (Bureau for Construction of Glass Factories), Mostrikotazh (Moscow Knitting Trust), Azneft (Azerbaijani Oil Trust), Grozneft (Grozny Oil Trust), Giproneft (State Institute for Designing Oil Refineries), Vsekomvodgosplan (State Planning Commission for Municipal Water Supply), Resinotrest (State Rubber Trust), Tsentroboomtrest (Central Paper Trust), Sevkavkostorg (North Caucasian State Trading Company), the R. K. I. (Commissariat for Workers' and Peasants' Inspection), and the State Geological Survey.

APPENDIX 5

EXPLANATORY NOTES

Weights and measures:

Kilogram	2.2046 lbs.
Centner	220.46 lbs.
Metric ton	2,204.6 lbs.
Meter	39.37 inches
Kilometer	0.621 miles
Square meter	10.764 square feet
Hectare	2.471 acres

Kopek	equals 0.5146 cents
Ruble	equals 51.46 cents
Chervonetz	equals \$5.146

Census Industry—Industrial establishments employing 15 workers or more and using mechanical power, or establishments where no mechanical power is used but at least 30 workers are employed.

Soviet fiscal year	October 1-September 30
Soviet agricultural year	July 1-June 30
Control figures—One-year plans drawn up by Gosplan at beginning of each year.	

DATE DUE

DEC 01

[illegible]

C00592890

HC
335
•B85

B4875686

LIBRARY
UNIVERSITY OF TEXAS
at San Antonio



